13701

NFRAP APPROVED

BJ 6/8/96

PRELIMINARY ASSESSMENT (PA) REPORT
FOR MOSS POINT MARINE, INC.
WPA, JACKSON COUNTY, MISSISSIPPI
MSD037971801

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF POLLUTION CONTROL
HAZARDOUS WASTE DIVISION
P. O. BOX 10385
JACKSON, MISSISSIPPI 39289-0385

February 29, 1996

PREPARED BY:

John M. Andrews

JOHN M. ANDREWS

APPROVED BY:

Phillip Weathersby

PHILLIP WEATHERSBY

TABLE OF CONTENTS

Introduction

The Mississippi Department of Environmental Quality, Office of Pollution Control (MS OPC), has conducted a Preliminary Assessment (PA) of the Moss Point Marine, Inc. facility located in Escatawpa, Jackson County, Mississippi. The PA was performed under the authority of the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). Location of the facility is Latitude 30° 28' 59" North, Longitude 88° 33' 42" West; SW 1/4, NW 1/4, Section 35, Township 6 S, Range 6 W, Jackson County, Mississippi (Reference 3). The elevation of the site is about 6 feet above mean sea level.

Background

Moss Point Marine is located in the alluvial plain of the Pascagoula River. It is located at the end of Trinity Drive in the Escatawpa corporation limits. The property consists of several buildings situated on approximately 114 acres. The property is bordered by marsh areas to the north and south, a residential area to the east, and by the Pascagoula River to the west.

Moss Point Marine fabricates and finishes marine barges. The fabrication and finishing of barges takes place over the entire facility and includes painting and priming operations for plate steel, uncompleted hulls, completed and uncompleted hull sections, and completed barges (Reference 4).

Waste Characteristics and Regulatory History

The principal hazardous waste produced at the facility are paint related wastes - ie. paint and spent solvents. The wastes, as generated, are managed in 5-gallon buckets and/or 55-gallon containers depending on the volume of fabrication and finishing activity (Reference 4). Once filled , the 5-gallon buckets are emptied into 55-gallon containers for storage, shipment and disposal. For purposes of this report, the contaminants of concern are carbon tetrachloride, pyridine, toluene, and xylene. There have been no sampling investigations at this facility to document any contamination. The waste quantity was conservatively calculated using the total area of the facility.

Moss Point Marine filed its first Notification of Hazardous Waste Activity form in February 1990 (Reference 4). Moss Point Marine is listed as a large quantity generator with the Hazardous Waste Division of the MS OPC.

Groundwater Pathway

Mississippi is located in the Gulf Coastal Plain of North America. The state is divided into twelve physiographic provinces. Two of the twelve provinces are represented in Jackson County. These are the Piney Woods province, in the northern three-quarters of the county, and the Coastal Meadows province, in the southern one-quarter of the county. The Moss Point facility lies within the Coastal Meadows province.

The facility is underlain by approximately five feet of a very fine sandy loam, a soil consisting of silt, clay, and about 50 percent sand. Underlying the sandy loam is approximately 90 feet of sand, gravel, and clay of terrace/alluvial deposits and the Citronelle formation. Below the Citronelle, in descending order, are the Graham Ferry, Pascagoula, and the Hattiesburg formations. These formations consist of interbedded layers of sand, shale, and silt. In the Escatawpa area, the 20 to 40 foot thick clay bed which usually separates the Graham Ferry and the overlying coarse sand and gravel of the Citronelle is absent in places, so the Graham Ferry and the Citronelle formations are considered hydraulically connected. The Graham Ferry formation is Pliocene age, whereas the Pascagoula and the Hattiesburg are Miocene age. The relation of the Graham Ferry and the underlying Pascagoula Formation is obscure, and a definite contact between the formations in the outcrop area has not been observed. Hence, the Graham Ferry is included with the Miocene age formations for purposes of this report. The Hattiesburg was not evaluated in this report because of its extreme depth. The base of the freshwater in the Miocene aquifer system in the Escatawpa area is approximately 1300 feet below sea level. The dip of the units is to the south.

According to the water well printout from the U.S. Geological Survey, there are 298 private/domestic drinking wells and 5 municipal wells within a four-mile radius from the site. These wells serve a total estimated population of 9,906 people (based on the 1990 census). The majority of the private wells and all of the municipal wells are screened in the Graham Ferry aquifer. However, as stated earlier, wells screened in the Graham Ferry are considered as Miocene for purposes of this report. The nearest private well is L025 located less than one quarter mile to the northeast of the facility. It is screened in the Pascagoula (Miocene) at a depth of 350 feet. The nearest municipal well (L032) is located 0.8 mile north-northeast of the facility and is screened in the Graham Ferry at a depth of 220 feet.

The number of wells within a four-mile radius from the site are listed below as to distance and aquifer:

Distance(miles)	Number of Private Wells in Aquifer		Number of Public Wells in Aquifer		
	ALLUVIUM	MIOCENE	ALLUVIUM	MIOCENE	TOTAL
0 - ¼		6			6
¼ - ½	1	5			6
½ - 1	3	15		1	19
1 - 2	14	35			49
2 - 3	18	70			88
3 - 4	17	114		4	135
TOTAL	53	245	0	5	**303**

Total Private	298
Total Public	5

Note: The Alluvium column includes wells screened in the Terrace deposits and the Citronelle formation as well as those screened in the Alluvium; the Miocene includes wells screened in the Graham Ferry, Pascagoula, and Hattiesburg formations.

(References 3, 4, 5, 7, 9, 12, 18, 19, and 20)

Climate and Soils

Annual precipitation for the Escatawpa, Jackson County area is 64 inches (Reference 8). Mean annual lake evaporation is about 47 inches; thus, the resultant net precipitation is 17.0 inches (Reference 15). The two-year, 24-hour rainfall is around 6.5 inches (Reference 10).

Based on the soil survey map of Jackson County, the predominant soils at the facility are: Fairhope, a moderately well drained very fine sandy loam with a two to five percent slope; Alluvial land, recent alluvium deposited by the Pascagoula River; and Swamp, a poorly drained area of course to medium-textured, highly organic soil (Reference 12).

Surface Water Pathway

Surface water flows off site directly into the Pascagoula River, which runs along the western property line, or into the marsh areas along the northern and southern property lines and then into the Pascagoula River. The flow continues south in the Pascagoula River for 12 miles before emptying into the Mississippi Sound where the 15-mile pathway is completed. Approximately 10 miles of wetlands are present in the 15-mile surface water pathway.
(References 3 and 4)

The facility is located in the 100-year flood zone (Reference 11). There are no drinking water intakes located along the 15-mile surface water pathway (Reference 17).

Endangered or threatened aquatic species known to inhabit the waters of the Pascagoula River and the Gulf of Mexico coastal waters are: Sperm, Sei, Humpback, Finback, and Right Whales; Kemp's, Green, Hawkbill, and Loggerhead turtles; and the American alligator (References 13 and 14).

Soil Pathway

The facility is situated on the east bank of the East Pascagoula River in Escatawpa. According to the 1990 census, Escatawpa has a population of 3,902. The majority of the area surrounding the site is marshland with residential areas to the east and south. The facility has approximately 500 employees. The table below shows the estimated residential population within one mile of the facility:

DISTANCE MILE	NUMBER OF HOUSES	NUMBER OF RESIDENTS[1]
0 - ¼	34	96
¼ - ½	102	288
½ - 1	259	730
TOTAL	395	1114

[1] 2.82 persons per household for Jackson County.

The nearest resident is approximately 200 feet south of the facility. A fence restricts access to the site. There is no school or day care center within 200 feet of the facility (Reference 3,4). There are no endangered or threatened terrestrial species listed specifically for this area of Jackson County, although five species are listed as endangered for the entire state. The species listed for the entire state are the Florida panther, the bald eagle, the peregrine falcon, Bachman's warbler, and the red-cockaded woodpecker.

(References 3, 7, 13, and 14)

Conclusion

The MS OPC concludes that no further remedial action is recommended under the CERCLA program.

REFERENCES

1. Environmental Protection Agency, 40 CFR Part 300, Hazard Ranking System; Final Rule, Federal Register, Vol. 55, Friday, December 14, 1990.

2. Superfund Chemical Data Matrix (SCDM), U. S. EPA.

3. Topographic Maps of the Moss Point Marine, Inc. area, Escatawpa, Mississippi.

   Pascagoula North, MS Quadrangle - 7.5 Minute Series
   Three Rivers, MS Quadrangle - 7.5 Minute Series

4. Information from the MS OPC Hazardous Waste Division files on Moss Point Marine, Inc., Escatawpa, Jackson County, Mississippi.

5. Printout from U. S. Geological Survey Data Base of Wells within the Moss Point Marine, Inc., Escatawpa, Mississippi study area.

6. Information on Public Water Supply Wells in Jackson County, Mississippi, from the Water Supply Division, Mississippi State Department of Health, Division of Water Supply.

7. Average Population per Household, Jackson County, Mississippi, April 1990 Census.

8. Mean Annual Precipitation Map, 1951-1980, Tishomingo County Geology and Mineral Resources, by Robert K. Merrill, Mississippi Bureau of Geology, p. 13.

9. Sources for Water Supplies in Mississippi, by B. E. Wasson, U. S. Geological Survey, Revised 1986, pp. 7 and 30.

10. Two-Year, 24-Hour Rainfall Map, "Rainfall Frequency Atlas of the United States," by David M. Hershfield, U. S. Department of Commerce, Technical Paper No. 40, 1961.

11. Flood Insurance Rate Map, September 4, 1987, Jackson County, Mississippi, Community-Panel No. 285256 0140 D, Panel 140 of 275.

12. United States Department of Agriculture, Soil Survey, Jackson County, Mississippi, 1964, pp. 33, 38, 41, 48, Sheet Number 46, and the Soil Legend.

13. U. S. Fish and Wildlife Service:

    1) Vicksburg Office, Species List by County.
    2) Jackson Office, Topographic Maps Indicating Sensitive Environments.
    3) Region IV - Atlanta, "Endangered and Threatened Species."

14. "Endangered Species of Mississippi, 1992," Mississippi Department of Wildlife, Fisheries and Parks, Museum of Natural Science.

15. Average Annual Lake Evaporation Map, "Evaporation Maps for the United States," by M. A. Kohler, T. J. Nordenson, and D. R. Baker, U. S. Department of Commerce, Weather Bureau, Technical Paper No. 37, Plate 1.

16. Information from the MS OPC Industrial Wastewater Control Branch files, Moss Point Marine, Inc., Escatawpa, Mississippi facility.

17. Information on groundwater and surface water use from the Mississippi Office of Land and Water Resources, Jackson, Mississippi.

18. Geology and Ground-Water Resources of the Coastal Area in Mississippi, 1944, by Glen Francis Brown, et al., Mississippi State Geological Survey, Bulletin 60, pp. 17, 19, 29, 30, 38, 45-61, and Plate 1.

19. Water Resources in the Pascagoula Area, 1965, by Edward J. Harvey, Harold G. Golden, and H.G. Jeffrey, U.S. Geological Survey Water - Supply Paper 1763, pp. 86-107.

20. Characterization of Aquifers Designated as Potential Drinking Water Sources in Mississippi, 1982, by L. A. Gandl, Water Resources Division, U. S. Geological Survey, pp. 15-20.

federal register

Friday
December 14, 1990

Part II

Environmental Protection Agency

40 CFR Part 300
Hazard Ranking System; Final Rule

REFERENCE 1

SUPERFUND CHEMICAL DATA MATRIX

9 March 1993

REFERENCE 2

OVERSIZED

DOCUMENT

STATE OF MISSISSIPPI

DEPARTMENT OF ENVIRONMENTAL QUALITY

JAMES I. PALMER, JR.
EXECUTIVE DIRECTOR

August 1, 1994

CERTIFIED MAIL NO. Z 765 989 227

Pat Killeen
Trinity Marine Group
P. O. Box 3029
Gulfport, MS 39505

Dear Mr. Killeen:

Re: RCRA Inspection

Enclosed please find our inspection report and checklist that was completed as a result of a Compliance Evaluation Inspection (CEI) at Moss Point Marine Inc., on July 15, 1994. This inspection revealed the following violation of Mississippi Hazardous Waste Management Regulation (MHWMR):

268.7 (a)(6): The generator must retain on-site for five years a copy of all certifications, waste analysis, supporting data, manifests, and other documentation for waste subjected to land disposal restriction.

262.34 (a)(2): The generator must label all hazardous waste storage containers with the date upon which period of accumulation begins.

262.34 (a)(1): The generator must inspect container storage area at least weekly for leaks, corrosion, deterioration etc. and maintain a written log of the inspections.

265.35(b): a copy of the contingency plan and all revisions to the plan must be submitted to all local police departments, fire departments, hospitals, and state and local emergency response teams that may be called upon to provide emergency service.

265.52 (f): The contingency plan must include an evacuation plan if evacuation could be necessary. The plan must describe signals used to begin evacuation routes and alternative evacuation routes.

Reference 4

* 262.34 (c)(1): The generator may accumulate a maximum of 55 gallons of hazardous waste in containers at or near any point of generation.

* 265.173 (a): Container holding hazardous waste must always be closed during storage except when waste is added or removed (no open bungs or funnels).

We request that you respond to these alleged violations within 10 days of receipt of this letter. This response should contain: (1) actions that have been taken to correct the violation, (2) schedule for correcting the violation, or (3) reasons that you believe the alleged violation did not exist. The Office of Pollution Control will review this information before determining if further action is warranted. Failure to submit this information may result in enforcement action.

If you have any questions, do not hesitate to contact me at (601) 961-5171.

Sincerely,

Mohammad Yassin

Mohammad Yassin

cc: Mr. Alan Farmer, USEPA

* Penalties should be imposed.

RCRA Inspection

1. Inspector and Author of Report
Mohammad Yassin
Mississippi Department of Environmental Quality (MSDEQ)
Office of Pollution Control (OPC)

2. Facility Information
Moss Point Marine Inc., (MSD037971801)
Trinity Drive
Escatawpa, Mississippi
Jackson County

3. Responsible Company Official
Gene Young - Safety Manager

4. Inspection Participants
Jim Whitley - Program Manager
Pat Killeen - Environmental
Mohammad Yassin - MSDEQ

5. Date and Time of Inspection
July 15, 1994 - 9:15 AM - 3:45 PM

6. Applicable Regulation
Mississippi Hazardous Waste Management Regulation (MHWMR)
MHWMR 262
MHWMR 263
MHWMR 265
MHWMR 268

7. Purpose of Inspection
Ensure facility's compliance with MHWMR.

8. Facility Description
Moss Point Marine Inc. (MPMI), is located on Trinity Drive, west of Pascagoula River, Escatawpa, Jackson County, Mississippi. It is approximately 114 acres in size with a restricted access by a 7-ft high fence, Pascagoula River, and a gate. The facility builds ships for both military and civilian purposes. The building process is conducted outdoor and consists of, cutting, welding, assembly of mechanical/electrical parts, painting, and testing. The following buildings and equipment are located on site; offices, warehouses, fabrication shop, clock house, carpentry shop, overhead cranes, storage areas, parking area, cutting machine, welding machines, spraying equipment, pipes, valves, communication system (telephone), and fire extinguishers.

The principal hazardous waste generated and managed at the facility are paint related wastes.

MPMI operates and manages two accumulation areas and one 90-day storage area. Accumulation area #1 is located in the south western portion of the facility. It is approximately 7 ft x 7 ft and 7 ft high, and consists of metal floor, 6-in dike, four columns, and a roof. Accumulation area #2 is similar to #1 in structure and is used to consolidate wastes from through out the facility into 55-gallon drums. The storage area is located in the northern portion of the facility more than 100 feet from property line. It is approximately 35 ft x 35 ft and about 18 feet high. It consists of four columns, a concrete floor, 6-in metal dike, and a roof. The metal dike would prevent any migration of waste from storage area.

9. Finding

Based on the facility's manifests (1991-1994), MPMI generated mainly waste paint related materials. These wastes were transported mainly by Trinity Industries, the owner of MPMI, and were shipped to the following facilities; American Resource Recovery, Fisher Industrial Service, and Rinco. The following deficiencies were found in the facility's manifests;

Manifest #	Date	Transporter and Designated facility	Waste Description	Deficiencies
33780	5/02/91	American Resource recovery	waste paint	No land disposal restriction
33757	3/22/91	-//-	-//-	-//-

MPMI has been maintaining personnel training record and log for hazardous waste containers inspection. The week of July 11, 1994 and Mach 28, 1992, no weekly inspections were conducted of hazardous waste containers in the storage area. The following deficiencies were found in the contingency plan; * the plan was not submitted to the local police departments, fire departments, hospitals, and state and local emergency response team that may be called upon to provide emergency services. * the plan did not have an evacuation plan. At the time of this inspection there two accumulation areas and one storage area on site.

Accumulation Area #1

One 55-gallon drum was used to hold hazardous flammable waste. The drum was opened on top and labeled flammable waste.

Accumulation Area #2

Five 5-gallon cans holding waste paint, opened on top, were going to be consolidated into 55-gallon drums.

Storage Area

Upon my arrival in the morning, I noticed only one 55-gallon drum in the storage area. I was asked to come back in the afternoon because MPMI"s environmental coordinator was out of town. I came back at around 1 PM. This time there were 15 55-gallon drums labeled hazardous waste in the storage area. One of the 15 55-gallon drums did not have an accumulation date. Mr. Whitley said that 14 55-gallon drums were being brought to the storage area from accumulation area.

10. <u>Conclusion</u>

This inspection revealed that the facility is in violation of the following MHWMR;

268.7 (a)(6): The generator must retain on-site for five years a copy of all certifications, waste analysis, supporting data, manifests, and other documentation for waste subjected to land disposal restriction.

262.34 (a)(2): The generator must label all hazardous waste storage containers with the date upon which period of accumulation begins.

262.34 (a)(1): The generator must inspect container storage area at least weekly for leaks, corrosion, deterioration etc. and maintain a written log of the inspections.

265.35(b): a copy of the contingency plan and all revisions to the plan must be submitted to all local police departments, fire departments, hospitals, and state and local emergency response teams that may be called upon to provide emergency service.

265.52 (f): The contingency plan must include an evacuation plan if evacuation could be necessary. The plan must describe signals used to begin evacuation routes and alternative evacuation routes.

262.34 (c)(1): The generator may accumulate a maximum of 55 gallons of hazardous waste in containers at or near any point of generation.

265.173 (a): Container holding hazardous waste must always be closed during storage except when waste is added or removed (no open bungs or funnels).

11. Signed By:

Mohammad Yassin

Mohammad Yassin
Inspector

12. Approved By;

David Lee

David Lee
RCRA Coordinator

TRINITY INDUSTRIES, INC.

* Penalties should be issued for these violations

August 22, 1994

DEPT OF ENVIRONMENTAL QUALITY
REC'D
AUG 24 1994

Mr. Mohammad Yassin
State of Mississippi
Department of Environmental Quality
Office of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39289-0385

RE: RCRA Inspection; Trinity Industries, Inc., Marine Group Facility at Moss Point, Mississippi (Yard No. 81).

Dear Mr. Yassin,

This letter is forwarded to your attention at the Mississippi Department of Environmental Quality, Office of Pollution Control ("Agency") in response to the agency's Notice of Violation letter dated August 1, 1994. Trinity Industries, Inc. ("Trinity") requested additional time within which to file these responses and was granted, by the Agency, an extension to August 23, 1994.

ok

With respect to the citation for violation of 268.7(a)(6), failure to maintain records on site, Trinity assumes the citation was intended to be 268.7(a)(7). In this regard, at the time of the inspection, only two (2) "Land Disposal Restriction Rule" notices were not located with the waste manifest records. Please find enclosed the two (2) notices that were not located (Exhibit A). Trinity will continue to maintain filing protocols intended to assure that waste records are maintained in compliance with Mississippi rules and regulations.

did not respond to the violation in regards "one drum did not have accumulation date"

The second citation in the subject letter, Section 262.34(a)(2), addresses hazardous waste container labeling. At the time of the inspection there were approximately twenty (20) hazardous waste drums within the waste holding area. All drums were labeled. Trinity waste handling procedures are the responsibility of the facility's environmental manager. The labeling of waste drums is carried out in accordance with applicable Mississippi regulations. These regulations have been reviewed with the environmental manager in order to assure compliance. *

The weeks of July 11, 18 and March 28, 92 no weekly inspections were conducted.

Section 262.34(a)(1) requires weekly inspections of the hazardous waste storage area. Trinity procedures require the environmental manager to inspect the container storage area twice weekly and to maintain a written record of these inspections. The paint foreman assumes this responsibility when the environmental manager is absent from the facility. At the time of the inspection, the facility's twice weekly inspection logs were reviewed by the Agency. The container storage area is constructed of a diked, concrete base with a tin roof. Any drum leaks that may occur are well controlled with migration restricted. Trinity is confident that twice weekly inspections are sufficient to maintain substantial compliance with the subject rule.

Mr. Klein did not address these; No penalties are recommended for this violation.

2525 STEMMONS FREEWAY • DALLAS, TEXAS 75207 • POST OFFICE BOX 568887 • DALLAS, TEXAS 75356-8887
(214) 631-4420 • FAX: (214) 689-0501

ok -

Trinity assumes that the citation for Section 265.35(b) was intended to read Section 265.53(b). Accordingly, please be advised that the facility is in the process of contacting local and state emergency response agencies to advise them of facility contingency planning and possible needs for emergency assistance.

ok

With respect to Section 265.52(f), at the time of the inspection the Facility Response Plan was reviewed. The facility maintains a map for purposes of directing personnel evacuation. This map is posted throughout the facility to aid personnel in the event of an emergency. Further, each employee is familiar with this posting. The Facility Response Plan has been amended to include a copy of this evacuation map.

Section 262.34(c)(1) addresses satellite accumulation. During the inspection, one (1) drum of waste paint related material, accumulated at the paint area, had been filled and was waiting for forklift transportation to the waste storage area. This drum was properly labeled. A second drum in the paint area had just begun to be filled with waste paint related materials. Trinity waste management procedures require that filled accumulation drums be transported to the waste holding area once accumulation is completed (i.e. the 55 gallon drum is filled). At the time of the inspection, the forklift was moving other materials. However, the forklift's next task was to move the subject drum to the waste holding area. This was accomplished on a timely basis. It is Trinity's position that such slight delays are inherent in fabrication operations and should not be considered violations of the cited rule. Production schedules and forklift schedules are not always in unison, yet timely removal of the accumulation drum to the waste holding area is substantial compliance with the rule. Trinity seeks to coordinate equipment use with production requirements to facilitate regulatory compliance. *

When I arrived in the morning the facility had one 55-gallon drum in the storage area. When I came back in the afternoon there were 15 drums. The question was where did the 14 drums came from? Mr. Whitley said that they came from accumulation areas.

Section 265.173(a) addresses waste container management. At the time of the inspection, a waste drum was noted with the waste funnel in the container bung. The funnel is used to transfer liquid waste from the accumulation drum to the waste disposal drum. Facility procedures call for the funnel to be removed from the bung after the waste is transferred. The funnel is placed in a small five (5) gallon bucket within the waste holding area to contain drips. These procedures have been reviewed with facility personnel. *

did not address the violation

These responses should resolve the issues raised in the Agency's letter of August 1, 1994. If I can be of further assistance in this matter, please call. Thank you.

Sincerely,

Pat Killeen

Pat Killeen

cc: Theis Rice

LAND DISPOSAL RESTRICTION RULE
40 CFR 268

Generator Notification To
AMERICAN RESOURCE RECOVERY CORPORATION
Regarding Shipment of Waste Restricted From Land Disposal

Generator Name: Trinity #81

Generator EPA I.D. #: MSD037721801

Manifest #: 33757 EPA Waste Code: D001

Waste Sub-Category: Ignitable Liquids ≥10% TOC

Treatability Group: Waste Water (WW) ______ Non-Waste Water (NWW) ✓

Treatment Standard: 40CFR268.41 ____ 40CFR268.42 ✓ 40CFR268.43 ____

Specified Technology: FSUBS / RORGS / Incin

Comments:

The solvent waste, waste constituent, or sub-category listed above DOES NOT MEET the Land Disposal Restriction Treatment Standard and cannot be land disposed.

X Gene S. Young
Generator Signature

3/22/91
Date

Note: Attach a Waste Analysis if different from ARR Qualification Analysis.

EXHIBIT A

1/4

LAND DISPOSAL RESTRICTION RULE
40 CFR 268

Generator Notification to
AMERICAN RESOURCE RECOVERY CORPORATION
Regarding Shipment of EPA HAZARDOUS WASTE Nos. F001, F002, F003, F004, F005

Generator Name: Trinity #81 Generator EPA I.D. #: MSD037221801

Manifest #: J3757 EPA Waste Codes: F003 F005

Comments:

Treatment Standard for F001-F005 Waste Constituents.

Directions: Circle each hazardous waste constituent in the proper treatability group (waste water or non-waste water) that is present in your waste in excess of the Treatment Standard.

Waste Constituent	268.41 Waste Water	268.41 Non-Waste Water	268.42 Waste Water	268.42 Non-Waste Water	268.43 Waste Water	268.43 Non-Waste Water
Acetone	0.05	0.59				
N-Butyl Alcohol	5.0	5.0				
Carbon Disulfide	1.05	4.81				
Carbon Tetrachloride	0.05	0.96				
Chlorobenzene	0.15	0.05				
Cresols and Cresylic Acid	2.82	0.75				
Cyclohexanone	0.125	0.75				
1,2-Dichlorobenzene	0.65	0.125				
Ethyl Acetate	0.05	0.75				
Ethyl Ether	0.05	0.75				
Ethyl Benzene	0.05	0.053				
Isobutanol	5.0	5.0				
Methanol	0.25	0.75				
Methylene Chloride	0.20	0.96				
Methylene Chloride (from pharmaceutical)					0.44	N/A
Methyl Ethyl Ketone	0.05	0.75				
Methyl Isobutyl Ketone	0.05	0.33				
Nitrobenzene	0.66	0.125				
Pyridine	1.12	0.33				
Tetrachloroethylene	0.079	0.05				
Toluene	1.12	0.33				
1,1,1-Trichloroethane	1.05	0.41				
1,2,2-Trichloro-1,2,2-Trifluroethane	1.05	0.96				
Trichloroethylene	0.062	0.091				
Trichlorofluromethane	0.05	0.96				
Xylene	0.05	0.33				
2-Nitropropane			CARBN or INCIN	INCIN		
2 Ethoxyethanol			BIODG or INCIN	INCIN		
1,1,2-Trichloroethane					0.030	7.6
Benzene					0.070	3.7

2/4

The solvent waste constituents marked above DO NOT MEET the Land Disposal Restriction Treatment Standard and cannot be land disposed.

X [signature] 3/22/91

LAND DISPOSAL RESTRICTION RULE
40 CFR 268
Generator Notification To
AMERICAN RESOURCE RECOVERY CORPORATION
Regarding Shipment of Waste Restricted From Land Disposal

Generator Name: Trinity #91

Generator EPA I.D. #: MS0037971821

Manifest #: 33780 EPA Waste Code: D001

Waste Sub-Category: Ignitable Ethane or = to 10% TOC

Treatability Group: Waste Water (WW) ____ Non-Waste Water (NWW) X

Treatment Standard: 40CFR268.41 ____ 40CFR268.42 X 40CFR268.43 ____

Specified Technology: Fuel Subs

Comments:

The solvent waste, waste constituent, or sub-category listed above DOES NOT MEET the Land Disposal Restriction Treatment Standard and cannot be land disposed.

X Gene Young — Generator Signature

5/1/91 — Date

Note: Attach a Waste Analysis if different from ARR Qualification Analysis.

3/4

LAND DISPOSAL RESTRICTION RULE
40 CFR 268

Generator Notification to
AMERICAN RESOURCE RECOVERY CORPORATION
Regarding Shipment of EPA HAZARDOUS WASTE Nos. F001, F002, F003, F004, F005

Generator EPA I.D. #: MSD0372271801

Generator Name: Trinity #21

EPA Waste Codes: F003, F005

Manifest #: 33780

Comments:

Treatment Standard for F001-F005 Waste Constituents.

Directions: Circle each hazardous waste constituent in the proper treatability group (waste water or non-waste water) that is present in your waste in excess of the Treatment Standard.

Waste Constituent	268.41 Waste Water	268.41 Non-Waste Water	268.42 Waste Water	268.42 Non-Waste Water	268.43 Waste Water	268.43 Non-Waste Water
Acetone	0.05	0.59				
N-Butyl Alcohol	5.0	5.0				
Carbon Disulfide	1.05	4.81				
Carbon Tetrachloride	0.05	0.96				
Chlorobenzene	0.15	0.05				
Cresols and Cresylic Acid	2.82	0.75				
Cyclohexanone	0.125	0.75				
1,2-Dichlorobenzene	0.65	0.125				
Ethyl Acetate	0.05	0.75				
Ethyl Ether	0.05	0.75				
Ethyl Benzene	0.05	0.053				
Isobutanol	5.0	5.0				
Methanol	0.25	0.75				
Methylene Chloride	0.20	0.96				
Methylene Chloride (from pharmaceutical)					0.44	N/A
Methyl Ethyl Ketone	0.05	0.75				
Methyl Isobutyl Ketone	0.05	0.33				
Nitrobenzene	0.66	0.125				
Pyridine	1.12	0.33				
Tetrachloroethylene	0.079	0.05				
Toluene	1.12	0.33				
1,1,1-Trichloroethane	1.05	0.41				
1,2,2-Trichloro-1,2,2-Trifluroethane	1.05	0.96				
Trichloroethylene	0.062	0.091				
Trichlorofluromethane	0.05	0.96				
Xylene	0.05	0.15				
2-Nitropropane			CARBN or INCIN	INCIN		
2 Ethoxyethanol			BIODG or INCIN	INCIN		
1,1,2-Trichloroethane					0.030	7.6
Benzene					0.070	3.7

4/4

The solvent waste constituents marked above DO NOT MEET the Land Disposal Restriction Treatment Standard and cannot be land disposed.

X Gene Young

5/1/91
Date

STATE OF MISSISSIPPI
DEPARTMENT OF ENVIRONMENTAL QUALITY
JAMES I. PALMER, JR.
EXECUTIVE DIRECTOR

September 8, 1994

CERTIFIED MAIL NO. Z 765 989 211

Pat Killeen
Trinity Marine Group
P. O. Box 3029
Gulfport, MS 39505

Dear Mr. Killeen:

Re: Agreed Order
Moss Point Marine Inc.

Enclosed please find an Agreed Order which addresses certain RCRA violations at the above referenced facility. Please review this document and, if the wording and conditions contained within it are agreeable to Moss Point Marine Inc. / Trinity Marine Group, have it signed and dated by the responsible company official and returned to my attention at the above address by September 27, 1994. If the wording and conditions are not agreeable to Moss Point Marine, please contact me or David Lee at your earliest convenience so that we can discuss any change that may be necessary.

If you have any questions, please contact me at (601) 961-5171.

Sincerely,

Mohammad Yassin

Mohammad Yassin
Hazardous Waste Division

BEFORE THE MISSISSIPPI COMMISSION ON
ENVIRONMENTAL QUALITY

ORDER NO. ________________

MISSISSIPPI COMMISSION ON
ENVIRONMENTAL QUALITY

COMPLAINANT

VS.
MOSS POINT MARINE INC./
TRINITY MARINE GROUP
ESCATAWPA, JACKSON COUNTY
EPA ID # MSD 037971801

RESPONDENT

AGREED ORDER

COME NOWTHE Mississippi Commission on Environmental Quality (commision), Complainant, and Moss Point Marine Inc., Respondent, in the above captioned cause and agree as follows:

(1)

On July 15, 1994, The Mississippi Department of Environmental Quality personnel conducted an inspection at Moss Point Marine Inc. This inspection revealed that the facility was in violation of the following Mississippi Hazardous Waste Management Regulations (MHWMR):

262.34 (a)(2): The generator must label all hazardous waste storage containers with the date upon which period of accumulation begins.

265.173 (a): Container holding hazardous waste must always be closed during storage except when waste is added or removed (no open bungs or funnels).

(2)

In lieu of a formal enforcement hearing concerning the violation listed above, Complainant and Respondent agree to settle this matter as follows:

> Respondent will pay Complainant the determined and agreed on penalty of $600.00 within thirty (30) days of receipt of this order.

3.

In the event Respondent fails to comply with any of the terms of this Agreed Order, the Agreed Order shall become fully enforceable through the appropriate chancery court. The Mississippi Department of Environmental Quality, acting on behalf of the Commission, may proceed in chancery court and may submit an affidavit to the chancery court, along with an appropriate complaint to enforce this Order of the Commission, and such affidavit shall be prima facie evidence upon which to obtain a final judgement against Respondent, in favor of the Mississippi Commission on Environmental Quality.

4.

Nothing in this Agreed Order shall limit the rights of the Mississippi Department of Environmental Quality or the Mississippi Commission on Environmental Quality in the event Respondent fails to comply with this Order. This agreement shall be strictly construed to apply to those matters expressly resolved herein.

5.

No time limit shall be extended by the Mississippi Department of Environmental Quality unless such extension is in writing and signed by the Executive Director of the Mississippi Department of Environmental Quality.

6.

Nothing contained in this Agreed Order shall limit the rights of the Complainant to take enforcement or other actions against Respondent for violations not addressed herein and for future violations of environmental laws, rules and regulations.

7.

Respondent understands and acknowledges that it is entitled to an evidentiary hearing before the Commission pursuant to Section 49-17-31 of the Mississippi Code Annotated (1972), as amended, and that it has made an informed waiver of that right.

ORDERED, this the _____ day of ______________, 1994.

MISSISSIPPI COMMISSION ON
ENVIRONMENTAL QUALITY

BY: ______________________

J. I. PALMER, JR.
EXECUTIVE DIRECTOR
MISSISSIPPI DEPARTMENT
OF ENVIRONMENTAL QUALITY

ACCEPTED AND AGREED TO, this the _____ day of ______________, 1994.

RESPONDENT

BY: ____________________________

TITLE: ________________________

STATE OF MISSISSIPPI
DEPARTMENT OF ENVIRONMENTAL QUALITY
JAMES I. PALMER, JR.
EXECUTIVE DIRECTOR

August 30, 1994

Pat Killeen
Trinity Marine Group
P. O. Box 3029
Gulfport, MS 39505

Dear Mr. Killeen:

As we discussed by phone yesterday, I am sending the summary sheet for the penalty calculations resulting from Mohammad Yassin's inspection of July 15, 1994. We have two possible routes for settlement of enforcement actions:

- We will issue an agreed order, stating the particulars of the issue, the penalty amount, and the payment due date. We will send the order to you, where it will be signed by the appropriate person and mailed back to us. It will then be signed by our Director, and mailed back to you. From that time, Trinity will have 30 days to send in the payment.

- If an order cannot be agreed upon, we can schedule a hearing before our Commission, which is a body of appointed individuals from around the state. They would hear both sides of the issue and make a determination.

Please let me know by September 14 of your preference of the above. If you have any questions on this matter, feel free to call me at 961-5377. Thank you for your prompt response.

Sincerely

David E. Lee

David E. Lee, P.E., Coordinator
Hazardous Waste Generator Section

TRINITY MARINE GROUP

TRINITY MARINE GULFPORT *A TRINITY INDUSTRIES COMPANY*
P.O. BOX 3029 / GULFPORT, MS 39505 / 13085 SEAWAY ROAD / GULFPORT, MS 39503
601-896-2020 / TELECOPY 601-896-2034

RECEIVED
SEP - 7 1994
Dept of Environmental Quality
Office of Pollution Control

September 2, 1994

State of Mississippi
Department of Environmental Quality
Office of Pollution Control
P.O.Box 10385
Jackson, Mississippi 39289-0385

RE: RCRA Inspection; Trinity Industries, Inc., Marine Group Facility at Moss Point, Mississippi (Yard No. 81), Department of Environmental Quality letter dated August 30, 1994, with Penalties Calculation exhibit

ATTN: Mr. Mohammad Yassin

Dear Mr. Yassin,

This letter is submitted to the Mississippi Department of Environmental Quality, Office of Pollution Control ("Agency"),in further response to the Agency's Notice of Violation letter dated August 1, 1994, specifically the alleged violation of 262.34(c)(1) and also in response to the referenced Agency letter of August 30,1994.

With respect to the requirements of Mississippi Hazardous Waste Management Regulations ("MHWMR") Sec. 262.34(c)(1),it is noted in the Agency's RCRA Inspection Report ("Report") that Mr. Whitley (plant employee) stated to you that the fourteen drums which had been moved to the storage area were "...being brought to the storage area from accumulation area..." At the time you first arrived at the facility you also noted in the Report that you "...noticed only one 55-gallon drum in the storage area..." Accordingly,the Notice of Violation alleges that the facility violated 262.34(c((1) under the impression that the facility had accumulated more than 55 gallons of hazardous waste in its satellite accumulation areas. This is not the case.

The subject site is a marine barge fabrication and finishing facility covering approximately 114 acres. The fabrication and finishing of barges takes place over the entire facility and includes painting and priming operations for plate steel, uncompleted hulls, completed and uncompleted hull sections and completed barges. Consequently, there are many points of generation of hazardous, paint related wastes. These wastes, as generated, are managed in 5-gallon buckets and/or 55-gallon containers depending on the volume of fabrication and finishing activity. Once filled, the 5-gallon buckets are emptied into 55-gallon containers for storage, shipment and disposal. As noted in the Report, the facility manages two (2) "designated" satellite accumulation areas for 55-gallon containers, further noting the 5-gallon bucket management of some waste (see Report, paragraph 9, subparagraph entitled "Accumulation Area #2).

Employees involved in surface coating at the facility, generate differing quantities of waste paint related materials depending on each days' assigned activities. Again, depending on the volume, this waste is accumulated "at or near (the) point of generation" in either 5-gallon buckets or 55-gallon containers. This accumulation is permitted, at any number of locations, by 262.34(c)(1), provided it is accumulated at or near the point of generation and provided no more than 55 gallons is accumulated.

The movement of 14, 55--gallon containers to the waste storage area as noted in the Report and as stated by Mr. Whitley, does not give rise to a violation of 262.34(c)(1). The accumulation of this waste occurred at numerous locations throughout the yard in compliance with the mandates of 262.34(c)(1). The fact that some of these containers may have come from the two (2) "designated" satellite accumulation areas is not consequential provided these two areas are also managed in accordance with 262.34(c)(1). This was the case.

Trinity respectfully requests the Agency consider the allegation regarding a violation of MHWMR 262.34(c)(1) resolved, and further, that the Agency retract the penalty calculation for the same allegation as contained in the exhibit to the Agency's August 30, 1994, letter.

Thank you for considering this information. If I can be of further assistance in this matter, please call.

Sincerely,

Pat Killeen

Pat Killeen

PK/lw

CC: Theis Rice

TRINITY MARINE GROUP

TRINITY MARINE GULFPORT *A TRINITY INDUSTRIES COMPANY*
P.O. BOX 3029 / GULFPORT, MS 39505 / 13085 SEAWAY ROAD / GULFPORT, MS 39503
601-896-2020 / TELECOPY 601-896-2034

RECEIVED
SEP 28 1994
Dept of Environmental Quality
Office of Pollution Control

September 27. 1994

Mr. Mohammad Yassin
Mississippi Dept. of Environmental Quality
Office of Pollution Control
Hazardous Waste Division
P. O. Box 10385
Jackson, Miss. 39289-0385

RE: Agreed Order
Moss Point Marine

Mr. Yassin,

Moss Point Marine request that in Section (1) of the Agreed Order, the below paragraph be included:

(2)

In lieu of a formal enforcement hearing the violation listed above, Complainant and Respondent agree to settle this matter as follows:

Respondent will pay Complainant the determined and agreed on penalty of $600.00 within thirty (30) days of receipt of this order.

This Agreed Order ("Order") is entered into regarding allegations contained in the notice of violation issued to Moss Point Marine on August 1, 1994, by the Mississippi Department of Environmental Quality and constitutes a compromise and settlement of the allegations and all disputed and contested facts. Moss Point Marine expressly denies the findings of fact, conclusions of law and determinations set forth in the notice of violation. Moss Point Marine has agreed to compromise and settle fully, finally and forever the disputed allegations for the sole purpose of avoiding the expense, uncertainty and burden of litigation. Therefore, neither the execution of this Order, nor any of the acts undertaken to consummate this Order shall be deemed to constitute an admission of the validity of the claims made by the Mississippi Department of Environmental Quality or deemed to constitute a resolution of disputed or contested facts, nor shall anything relating to this Order be an admission of liability in any regard. Neither this Order, nor any portion hereof shall be admissible against Moss Point Marine for any reason whatsoever except solely for the purposes of enforcing this Order.

If you have any questions in this matter, please contact me at 601-896-2020.

Sincerely,

Pat Killeen
Trinity Marine Group

STATE OF MISSISSIPPI
DEPARTMENT OF ENVIRONMENTAL QUALITY
JAMES I. PALMER, JR.
EXECUTIVE DIRECTOR

August 1, 1994

CERTIFIED MAIL NO. Z 765 989 227

Pat Killeen
Trinity Marine Group
P. O. Box 3029
Gulfport, MS 39505

Dear Mr. Killeen:

Re: RCRA Inspection

Enclosed please find our inspection report and checklist that was completed as a result of a Compliance Evaluation Inspection (CEI) at Moss Point Marine Inc., on July 15, 1994. This inspection revealed the following violation of Mississippi Hazardous Waste Management Regulation (MHWMR):

268.7 (a)(6): The generator must retain on-site for five years a copy of all certifications, waste analysis, supporting data, manifests, and other documentation for waste subjected to land disposal restriction.

262.34 (a)(2): The generator must label all hazardous waste storage containers with the date upon which period of accumulation begins.

262.34 (a)(1): The generator must inspect container storage area at least weekly for leaks, corrosion, deterioration etc. and maintain a written log of the inspections.

265.35(b): a copy of the contingency plan and all revisions to the plan must be submitted to all local police departments, fire departments, hospitals, and state and local emergency response teams that may be called upon to provide emergency service.

265.52 (f): The contingency plan must include an evacuation plan if evacuation could be necessary. The plan must describe signals used to begin evacuation routes and alternative evacuation routes.

OFFICE OF POLLUTION CONTROL, P. O. BOX 10385, JACKSON, MS 39289-0385, (601) 961-5171

262.34 (c)(1): The generator may accumulate a maximum of 55 gallons of hazardous waste in containers at or near any point of generation.

265.173 (a): Container holding hazardous waste must always be closed during storage except when waste is added or removed (no open bungs or funnels).

We request that you respond to these alleged violations within 10 days of receipt of this letter. This response should contain: (1) actions that have been taken to correct the violation, (2) schedule for correcting the violation, or (3) reasons that you believe the alleged violation did not exist. The Office of Pollution Control will review this information before determining if further action is warranted. Failure to submit this information may result in enforcement action.

If you have any questions, do not hesitate to contact me at (601) 961-5171.

Sincerely,

Mohammad Yassin

Mohammad Yassin

cc: Mr. Alan Farmer, USEPA

STATE OF MISSISSIPPI
DEPARTMENT OF ENVIRONMENTAL QUALITY
JAMES I. PALMER, JR.
EXECUTIVE DIRECTOR

March 23, 1992

Moss Point Marine, Inc.
P.O. Box 1310
Escatawpa, MS 39552

Attn: Mr. Gene Young

Re: Large Quantity Generator Number

This letter acknowledges receipt of your subsequent notification form as a Mississippi Large Quantity Generator.

The location identification number, MSD037971801, is assigned to:

7801 Trinity Drive

The above location with its assigned number is now designated as a Large Quantity Generator in our files. It is suggested that you secure and become familiar with Hazardous Waste Regulations, especially the chapters dealing with Large Quantity Generators. Your identification number must be used when manifesting any hazardous waste.

It is important that this office be notified in writing within seven (7) days of ANY changes of the information submitted on your notification form.

Should you have any questions please contact this office at (601) 961-5171.

Very truly yours,

Michael J. Weaver
Hazardous Waste Division

Enclosure

Please print or type with ELITE type (12 characte er inch) in the unshaded areas only

Form Approved. OMB No. 2050-0028. Expires 10-31-91. GSA No. 0248-EPA-OT

Please refer to the *Instructions for Filing Notification* before completing this form. The information requested here is required by law (*Section 3010 of the Resource Conservation and Recovery Act*).

EPA

Notification of Regulated Waste Activity

United States Environmental Protection Agency

Date Received (For Official Use Only)
MAR 1 8 1992
DEQ-OPC

I. Installation's EPA ID Number ***(Mark 'X' in the appropriate box)***

[ ] A. First Notification   [X] B. Subsequent Notification *(complete item C)*

C. Installation's EPA ID Number: M S D 0 3 7 9 7 1 8 0 1

II. Name of Installation ***(Include company and specific site name)***

MOSS POINT MARINE INC.

III. Location of Installation ***(Physical address not P.O. Box or Route Number)***

Street: 7801 TRINITY DR.

Street (continued):

City or Town	State	ZIP Code
ESCATAWPA	MS	39552 -

County Code	County Name
059	JACKSON

IV. Installation Mailing Address ***(See instructions)***

Street or P.O. Box: P O BOX 1310

City or Town	State	ZIP Code
ESCATAWPA	MS	39552 -

V. Installation Contact ***(Person to be contacted regarding waste activities at site)***

Name (last)	(first)
YOUNG	GENE

Job Title	Phone Number (area code and number)
SAFETY MANAGER	601-475-6885

VI. Installation Contact Address ***(See instructions)***

A. Contact Address Location	Mailing	B. Street or P.O. Box
X	X	

City or Town	State	ZIP Code
		-

VII. Ownership ***(See instructions)***

A. Name of Installation's Legal Owner: TRINITY INDUSTRIES INC.

Street, P.O. Box, or Route Number: 2525 STEMMONS FREEWAY

City or Town	State	ZIP Code
DALLAS	TX	75356-8887

Phone Number (area code and number)	B. Land Type	C. Owner Type	D. Change of Owner Indicator	(Date Changed) Month	Day	Year
214-631-4200	P	P	Yes [ ] No [XX]			

EPA Form 8700-12 (01-90) Previous edition is obsolete.

Continue on reverse

Please print or type with ELITE type (_ characters per inch) in the unshaded areas only

Form Approved. OMB No. 2050-0028. Expires 10-31-91
GSA No. 0246-EPA-OT

ID – For Official Use Only

VIII. Type of Regulated Waste Activity (Mark 'X' in the appropriate boxes. Refer to instructions.)

A. Hazardous Waste Activity

1. Generator (See instructions)
   - [X] a. Greater than 1000kg/mo (2,200 lbs.)
   - [ ] b. 100 to 1000 kg/mo (220 - 2,200 lbs.)
   - [ ] c. Less than 100 kg/mo (220 lbs.)
2. Transporter (Indicate Mode in boxes 1-5 below)
   - [ ] a. For own waste only
   - [ ] b. For commercial purposes

   Mode of Transportation
   - [ ] 1. Air
   - [ ] 2. Rail
   - [ ] 3. Highway
   - [ ] 4. Water
   - [ ] 5. Other – specify
3. [ ] Treater, Storer, Disposer (at installation) Note: A permit is required for this activity; see instructions.
4. Hazardous Waste Fuel
   - [ ] a. Generator Marketing to Burner
   - [ ] b. Other Marketers
   - [ ] c. Burner – indicate device(s) – Type of Combustion Device
     - [ ] 1. Utility Boiler
     - [ ] 2. Industrial Boiler
     - [ ] 3. Industrial Furnace
5. [ ] Underground Injection Control

B. Used Oil Fuel Activities

1. Off-Specification Used Oil Fuel
   - [ ] a. Generator Marketing to Burner
   - [ ] b. Other Markerer
   - [ ] c. Burner – indicate device(s) – Type of Combustion Device
     - [ ] 1. Utility Boiler
     - [ ] 2. Industrial Boiler
     - [ ] 3. Industrial Furnace
2. [ ] Specification Used Oil Fuel Marketer (or On-site Burner) Who First Claims the Oil Meets the Specification

IX. Description of Regulated Wastes (Use additional sheets if necessary)

A. **Characteristics of Nonlisted Hazardous Wastes.** Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.20 - 261.24)*

1. Ignitable (D001)	2. Corrosive (D002)	3. Reactive (D003)	4. EP Toxic (D000)	(List specific EPA hazardous waste number(s) for the EP Toxic contaminant(s))
X				

B. **Listed Hazardous Wastes.** (See 40 CFR 261.31 - 33. See instructions if you need to list more than 12 waste codes.)

1	2	3	4	5	6
F003	F005				
7	8	9	10	11	12

C. **Other Wastes.** (State or other wastes requiring an I.D. number. See instructions.)

1	2	3	4	5	6

X. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

Signature	Name and Official Title (type or print)	Date Signed
Gene S. Young	GENE S. YOUNG	3/16/92

XI. Comments

Note: Mail completed form to the appropriate EPA Regional or State Office. (See Section III of the booklet for addresses.)

*Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved OMB No 2050-0028 Expires 9-30-88
GSA No 0246-EPA-OT

United States Environmental Protection Agency
Washington, DC 20460

EPA Notification of Hazardous Waste Activity

Please refer to the *Instructions for Filing Notification* before completing this form. The information requested here is required by law *(Section 3010 of the Resource Conservation and Recovery Act)*.

For Official Use Only

Comments

C

C

Installation's EPA ID Number	T/A	C	Approved	Date Received (yr. mo. day)	
C F		1			Jackson

I. Name of Installation

MOSS POINT MARINE

II. Installation Mailing Address

Street or P.O. Box

C 3 PO BOX 1310

City or Town	State	ZIP Code
C 4 ESCATAWPA	MS	39562

III. Location of Installation

Street or Route Number

C 5 7801 TRINITY DRIVE

City or Town	State	ZIP Code
C 6 ESCATAWPA	MS	39562

IV. Installation Contact

Name and Title (last, first, and job title) SAFETY DIRECTOR	Phone Number (area code and number)
C 2 FONTENETTE MALCOLM	504 286 2500

V. Ownership

A. Name of Installation's Legal Owner	B. Type of Ownership (enter code)
C R TRINITY INDUSTRIES	P

VI. Type of Regulated Waste Activity *(Mark 'X' in the appropriate boxes. Refer to instructions.)*

A. Hazardous Waste Activity

- ☑ 1a. Generator
- ☐ 1b. Less than 1,000 kg/mo.
- ☐ 2. Transporter
- ☐ 3. Treater/Storer/Disposer
- ☐ 4. Underground Injection
- ☐ 5. Market or Burn Hazardous Waste Fuel *(enter 'X' and mark appropriate boxes below)*
  - ☐ a. Generator Marketing to Burner
  - ☐ b. Other Marketer
  - ☐ c. Burner

B. Used Oil Fuel Activities

- ☐ 6. Off-Specification Used Oil Fuel *(enter 'X' and mark appropriate boxes below)*
  - ☐ a. Generator Marketing to Burner
  - ☐ b. Other Marketer
  - ☐ c. Burner
- ☐ 7. Specification Used Oil Fuel Marketer *(or On site Burner)* Who First Claims the Oil Meets the Specification

VII. Waste Fuel Burning: Type of Combustion Device *(enter 'X' in all appropriate boxes to indicate type of combustion device(s) in which hazardous waste fuel or off-specification used oil fuel is burned. See instructions for definitions of combustion devices.)*

N/A ☐ A. Utility Boiler ☐ B. Industrial Boiler ☐ C. Industrial Furnace

VIII. Mode of Transportation *(transporters only — enter 'X' in the appropriate box(es))*

☐ A. Air ☐ B. Rail ☐ C. Highway ☐ D. Water ☐ E. Other *(specify)* N/A

IX. First or Subsequent Notification

Mark 'X' in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your installation's EPA ID Number in the space provided below.

☑ A. First Notification ☐ B. Subsequent Notification *(complete item C)*

C. Installation's EPA ID Number: MSD037921801

ID — For Official Use Only		
C		T/A C
W		1

X. Description of Hazardous Wastes *(continued from front)*

A. Hazardous Wastes from Nonspecific Sources. Enter the four-digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
D001	F003	F005			
7	**8**	**9**	**10**	**11**	**12**

B. Hazardous Wastes from Specific Sources. Enter the four-digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

C. Commercial Chemical Product Hazardous Wastes. Enter the four-digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
37	**38**	**39**	**40**	**41**	**42**
43	**44**	**45**	**46**	**47**	**48**

D. Listed Infectious Wastes. Enter the four-digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 — 261.24)*

- [x] 1. Ignitable *(D001)*
- [ ] 2. Corrosive *(D002)*
- [ ] 3. Reactive *(D003)*
- [x] 4. Toxic *(D000)*

XI. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Name and Official Title *(type or print)*	Date Signed
Malcolm Fontenette	MALCOLM FONTENETTE	2-28-90

Notification of Hazardous Waste Activity
Addendum

Facility Name Moss Point Marine
City Escatawpa MS

INSTRUCTIONS:

MARK ALL THAT APPLY

A. Hazardous Waste Activity

1. Do you generate less than 100 kg/mo (220 lb/mo)? Yes __ No ✓

B. Used Oil Fuel Activities

7. Specification Used Oil Fuel Marketer (or On-Site Burner) Who First Claims the Oil Meets the Specification

N/A Marketer
N/A On-Site Burner

C. Recycling Activities

___ On-Site Solvent Recovery/Recycling
___ Lead-Acid Battery Recycling
___ Precious Metals Recycling (Silver from x-ray and photographic solutions)
✓ Other; specify American Resource Recovery

D. Hazardous Waste Storage

✓ Drums
___ Tanks
___ Impoundments
___ Other; specify ___

MOSS POINT MARINE, INC. *A TRINITY INDUSTRIES COMPANY*
P.O. BOX 1310 • 7801 TRINITY DRIVE, ESCATAWPA, MS 39552
(601) 475-6885 • TELECOPY: (601) 474-2517

TRINITY MARINE GROUP
HALTER MARINE • MOSS POINT MARINE • EQUITABLE SHIPYARDS • GRETNA MACHINE & IRON WORKS

RECEIVED
AUG 1 1 1995
Dept. of Environmental Quality
Office of Pollution Control

AUGUST 7, 1995

STATE OF MISSISSIPPI
DEPARTMENT OF ENVIRONMENTAL QUALITY
P.O. BOX 10385
JACKSON, MS. 39289-0385

ATTN: MR. MOHAMMAD YASSIN

RE: JULY 28, 1995 COMPLIANCE EVALUATION INSPECTION.

DEAR MR. YASSIN:

THE FOLLOWING CORRECTION ACTIONS HAVE BEEN TAKEN IN RESPONSE TO THE ALLEGED VIOLATIONS OF MISSISSIPPI HAZARDOUS WASTE MANAGEMENT REGULATION AS QUOTED:

265.173(a): CONTAINER HOLDING HAZARDOUS WASTE MUST ALWAYS BE CLOSED DURING STORAGE EXCEPT WHEN WASTE IS ADDED OR REMOVED (NO OPEN BUNGS OR FUNNELS).

CORRECTIVE ACTION WAS TAKEN IMMEDIATELY BY GENE YOUNG, MOSS POINT MARINE REPRESENTATIVE. ALL PERSONS INVOLVED IN HAZARDOUS WASTE COLLECTION WERE GIVEN ANNUAL RETRAINING ON AUGUST 2, 1995. THIS VIOLATION WAS DISCUSSED AND ALL NOTIFIED TO BE MORE CAREFUL TO AVOID REOCCURENCE.

265.52(e): THE CONTINGENCY PLAN MUST INCLUDE A LIST OF ALL EMERGENCY EQUIPMENT AT THE FACILITY, THE LOCATION AND PHYSICAL DIESCRIPTION OF EACH ITEM, AND A BRIEF OUTLINE OF EACH ITEMS CAPABILITY. THE LIST MUST BE KEPT UP-TO-DATE.

A WRITTEN LIST OF EMERGENCY EQUIPMENT HAS BEEN INSERTED IN TO THE EXISTING PLAN, AND IS INCLUDED FOR YOUR REFERENCE.

IF YOU HAVE ANY QUESTION, YOU MAY CONTACT ME AT (601) 475-6885.

SINCERELY,

Gene Young

GENE YOUNG
SAFETY MANAGER

EMERGENCY EQUIPMENT LIST

THE FOLLOWING EQUIPMENT AND SUPPLIES ARE ON SITE AND AVAILABLE IN CASE OF AN EMERGENCY INVOLVING HAZARDOUS MATERIALS.THIS EQUIPMENT IS LOCATED AT THE HAZARDOUS WASTE STORAGE AREA, IN A "EMERGENCY EQUIPMENT" CABINET:

- SQUARE AND ROUND TIP SHOVELS, TO BE USED FOR CLEAN-UP OF SPILLED PAINTS IN THE STORAGE AREA, OR OTHER PLACES, AS NEEDED.

- FIRE EXTINGUISHERS ARE PLACE IN "HAZARDOUS WASTE" STORAGE AREA IN CASE OF FIRES.

- ABSORBANT MATERIAL IS STORED IN EMERGENCY EQUIPMENT CABINET TO BE USED TO FACILITATE CLEAN-UP OF SPILLED LIQUIDS.

- 55 GALLON OPEN-TOP AND 85 GALLON SALVAGE DRUMS ARE STORED AT THE MAIN COLLECTION AREA, AND ARE ACCESSIBLE FOR PLACING SPILLED MATERIALS.

STATE OF MISSISSIPPI
DEPARTMENT OF ENVIRONMENTAL QUALITY
JAMES I. PALMER, JR.
EXECUTIVE DIRECTOR

July 31, 1995

CERTIFIED MAIL NO. Z 200 261 775

Gene Young
Moss Point Marine Inc.
7801 Trinity Drive
Escatawpa, MS 39552

Dear Mr. Young:

Re: RCRA Inspection

Enclosed please find our inspection report that was completed as a result of a Compliance Evaluation Inspection (CEI) at Moss Point Marine Inc., on July 28, 1995. This inspection revealed the following violation of Mississippi Hazardous Waste Management Regulation (MHWMR):

> 265.173 (a): Container holding hazardous waste must always be closed during storage except when waste is added or removed (no open bungs or funnels).
>
> 265.52(e): The contingency plan must include a list of all emergency equipment at the facility, the location and physical description of each item, and a brief outline of each items capability. The list must be kept up-to-date.

We request that you respond to these alleged violations within 10 days of receipt of this letter. This response should contain: (1) actions that have been taken to correct the violation, (2) schedule for correcting the violation, or (3) reasons that you believe the alleged violation did not exist. The Office of Pollution Control will review this information before determining if further action is warranted. Failure to submit this information may result in enforcement action.

If you have any questions, do not hesitate to contact me at (601) 961-5171.

Sincerely,

Mohammad Yassin

Mohammad Yassin

cc: Mr. Alan Farmer, USEPA

RCRA Inspection

1. <u>Inspector and Author of Report</u>
   Mohammad Yassin
   Mississippi Department of Environmental Quality (MSDEQ)
   Office of Pollution Control (OPC)

2. <u>Facility Information</u>
   Moss Point Marine Inc., (MSD037971801)
   Trinity Drive
   Escatawpa, Mississippi
   Jackson County

3. <u>Responsible Company Official</u>
   Gene Young - Safety Manager

4. <u>Inspection Participants</u>
   Gene Young - Moss Point Marine Inc.
   Mohammad Yassin - MSDEQ

5. <u>Date and Time of Inspection</u>
   July 28, 1995 - 9:15 AM - 11:45 AM

6. <u>Applicable Regulation</u>
   Mississippi Hazardous Waste Management Regulation (MHWMR)
   MHWMR 262
   MHWMR 263
   MHWMR 265
   MHWMR 268

7. <u>Purpose of Inspection</u>
   Ensure facility's compliance with MHWMR.

8. <u>Facility Description</u>
   Moss Point Marine Inc. (MPMI), is located on Trinity Drive, west of Pascagoula River, Escatawpa, Jackson County, Mississippi. It is approximately 114 acres in size with a restricted access by a 7-ft high fence, Pascagoula River, and a gate. About 240 people are employed at this location currently. The facility builds ships for both military and civilian purposes. The building process is conducted outdoors and consists of, cutting, welding, assembly of mechanical/electrical parts, painting, and testing. The following buildings and equipment are located on site; offices, warehouses, fabrication shop, clock house, carpentry shop, overhead cranes, storage areas, storage building, parking area, cutting machine, welding machines, spraying equipment, pipes, valves,

distillation equipment, tanks, communication system (telephone), and fire extinguishers.

The principal hazardous wastes generated and managed at the facility are paint related wastes.

MPMI operates and manages three accumulation areas and one 90-day storage area. Accumulation area #1 is located in the south western portion of the facility. It is approximately 7 ft x 7 ft and 7 ft high, and consists of metal floor, 6-in dike, four columns, and a roof. Accumulation area #2 is similar to #1 in structure and is used to consolidate wastes from through out the facility into 55-gallon drums. Accumulation area # 3 is located near the paint storage building approximately at the center of the facility. It consists of a 55-gallon drum on wooden pallets and is used to store wastes extracted from distillation equipment. The storage area is located in the northern portion of the facility more than 100 feet from property line. It is approximately 35 ft x 35 ft and about 18 feet high. It consists of four columns, a concrete floor, 6-in metal dike, four metal walls, and a roof. The metal dike would prevent any migration of waste from storage area.

9. <u>Finding</u>

Based on the facility's manifests (1991-1994), MPMI generated mainly waste paint related materials. These wastes were transported mainly by Trinity Industries, the owner of MPMI, and were shipped to the following facilities; American Resource Recovery, Fisher Industrial Service, and Rinco. No deficiencies were found in the facility's manifests;

MPMI has been maintaining personnel training record and log for hazardous waste containers inspection. The following deficiency was found in the contingency plan; the facility has an emergency equipment list. However, items in the list were not described and locations of these items was not given. No deficiencies were found in the annual reports. At the time of this inspection there were three accumulation areas and one storage area on site.

<u>Accumulation Area #1</u>

One 55-gallon drum used to hold hazardous flammable waste was labeled "Hazardous Waste" and dated 7-17- 1995. Twenty 5-gallon containers containing paint and three empty 15-gallon containers were located in this area.

<u>Accumulation Area #2</u>

Twenty five 5-gallon cans holding paint and three 55-gallon drums containing usable oil were at this location. In addition one 55-gallon drum labeled "Hazardous Waste" and dated 7-13-1995 was located on wooden pallets near but outside this accumulation area.

Accumulation Area #3
One 55-gallon drum containing dry paint mixed with liquid paint was labeled "Hazardous Waste" and dated 6-27-95. The drum was opened.

Storage Area
This area was empty at the time of this inspection.

MPMI is designated as a large quantity generator for the year 1995.

10. Conclusion
This inspection revealed that the facility is in violation of the following MHWMR;

265.173 (a): Container holding hazardous waste must always be closed during storage except when waste is added or removed (no open bungs or funnels).

265.52(e): The contingency plan must include a list of all emergency equipment at the facility, the location and physical description of each item, and a brief outline of each items capability. The list must be kept up-to-date.

11. Signed By:

Mohammad Yassin

Mohammad Yassin
Inspector

12. Approved By:

David Lee

David Lee
RCRA Coordinator

OVERSIZED

DOCUMENT

AQUIFER CODE EXPLANATION

112MRVA	Mississippi River alluvial aquifer
121CRNL	Citronelle Formation
121GRMF	Graham Ferry Formation
122MOCN	Miocene Series, undifferentiated
122PCGL	Pascagoula Formation
122HBRG	Hattiesburg Formation
122CTHL	Catahoula Formation
122CTHLU	Catahoula Formation, Upper
122CTHLM	Catahoula Formation, Middle
122CTHLL	Catahoula Formation, Lower
123WSBR	Waynesboro Sand
123VKBG	Vicksburg Group
123FRHL	Forest Hill Sand
124CCKF	Cockfield Formation
124SPRT	Sparta Sand
124TLLT	Tallahatta Formation
124MUWX	Meridian-Upper Wilcox aquifer
124TSCM	Tuscahoma Formation
124WLCXM	Middle Wilcox aquifer
124WLCXL	Lower Wilcox aquifer
211RPLY	Ripley Formation
211COFF	Coffee Sand
211EUTW	Eutaw Formation
211MCSN	McShan Formation
211GORD	Gordo Formation
211MSSV	Massive Sand
300PLZC	Paleozoic rocks

A - Air conditioning
B - Bottling
C - Commercial
D - Dewater
E - Power
F - Fire
H - Domestic
I - Irrigation
J - Industrial (cooling)
K - Mining
M - Medicinal
N - Industrial
P - Public supply
Q - Aquaculture
R - Recreation
S - Stock
T - Institutional
U - Unused
Y - Desalination
Z - Other (explain in remarks)

REFERENCE 5

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
L025 EDSEL GUNNER	NWSES35T06SR06W	H	360	--	122PCGL
L051 M F PARKINSON	SWNWS35T06SR06W	H	357	--	--
L054 T L DELASHMENT	NWNWS35T06SR06W	H	352	--	122MOCN
L055 J D KELLY	NWNWS35T06SR06W	H	357	--	122MOCN
L096 PAT DUGAN	NWSWS35T06SR06W	H	360	--	121GRMF
L112 HAROLD YOUNG	NENWS35T06SR06W	H	245	12.00	121GRMF

Ref 5

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
L024 HARRY PRASSENOS	NWNES35T06SR06W	H	238	--	122PCGL
L025 EDSEL GUNNER	NWSES35T06SR06W	H	360	--	122PCGL
L040 R SASSER	NENWS35T06SR06W	H	262.	--	121GRMF
L041 MIKE CUNNINGHAM	NWNES35T06SR06W	H	236.	--	121GRMF
L051 M F PARKINSON	SWNWS35T06SR06W	H	357	--	--
L054 T L DELASHMENT	NWNWS35T06SR06W	H	352	--	122MOCN
L055 J D KELLY	NWNWS35T06SR06W	H	357	--	122MOCN
L071 YOUNG	NWSES35T06SR06W	H	60.0	--	121CRNL
L088 A NOLF	NWNES35T06SR06W	H	252	--	121GRMF
L096 PAT DUGAN	NWSWS35T06SR06W	H	360	--	121GRMF
L097 OWEN WELLS	SWNWS35T06SR06W	H	679	6.00	122MOCN
L112 HAROLD YOUNG	NENWS35T06SR06W	H	245	12.00	121GRMF

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
L024 HARRY PRASSENOS	NWNES35T06SR06W	H	238	--	122PCGL
L025 EDSEL GUNNER	NWSES35T06SR06W	H	360	--	122PCGL
L026 FRANK WILKERSON	NENWS35T06SR06W	-	47.0	--	110TRCS
L027 J B MATHEWS	NESES35T06SR06W	H	252	--	122PCGL
L029 GRAHAM FISHCAMP	SESWS35T06SR06W	H	61.0	--	110TRCS
L032 ESCATAWPA UTIL DIST	NWNES26T06SR06W	P	245.	265.00	121GRMF
L033 JACKSON COUNTY	NWNES26T06SR06W	H	355.	--	122PCGL
L039 DEWEY BROADUS	NWSES26T06SR06W	H	221	2.00	--
L040 R SASSER	NENWS35T06SR06W	H	262.	--	121GRMF
L041 MIKE CUNNINGHAM	NWNES35T06SR06W	H	236.	--	121GRMF
L042 T D FURGERSON	SESWS35T06SR06W	H	651	--	--
L043 A E MARINO	SWSWS25T06SR06W	H	241	--	--
L045 UNKNOWN	SENWS26T05SR06W	H	370	--	122MOCN
L047 D E WESTBROOK	NENWS26T06SR06W	H	370	--	122MOCN
L050 A C FRANKLIN	SENWS35T06SR06W	H	220	--	--
L051 M F PARKINSON	SWNWS35T06SR06W	H	357	--	--
L052 A W SHERMAN	NWSES26T06SR06W	H	241	--	--
L053 BASTON HOMES	NESWS35T06SR06W	H	252	--	121GRMF
L054 T L DELASHMENT	NWNWS35T06SR06W	H	352	--	122MOCN
L055 J D KELLY	NWNWS35T06SR06W	H	357	--	122MOCN
L056 JAMES D CROWE	SWNWS36T06SR06W	H	245	--	--
L059 P J TILURAN	NESES35T06SR06W	H	250	--	122MOCN
L071 YOUNG	NWSES35T06SR06W	H	60.0	--	121CRNL
L088 A NOLF	NWNES35T06SR06W	H	252	--	121GRMF
L089 JAMES E HOWARD	----S35T06SR06W	H	250	--	121GRMF
L090 R E SMITH	----S35T06SR06W	H	255	--	121GRMF
L096 PAT DUGAN	NWSWS35T06SR06W	H	360	--	121GRMF
L097 OWEN WELLS	SWNWS35T06SR06W	H	679	6.00	122MOCN
L106 JESSE WHITE	SWSES35T06SR06W	H	355	--	121GRMF
L112 HAROLD YOUNG	NENWS35T06SR06W	H	245	12.00	121GRMF
P154 H C COOPER	NENWS02T07SR06W	-	89.0	--	112TRCS

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
L018 D W ALLEN	SENES23T06SR06W	H	245	--	121GRMF
L019 JESSIE ALLEN	SWSWS23T06SR06W	H	385	--	122PCGL
L020 FAIRLEY&BECKMAN	NWSES43T06SR06W	H	210	--	122PCGL
L021 WOODROW PERRY	NENWS26T06SR06W	H	367	3.00	122PCGL
L022 BILLS FISH CAMP	NWSES23T06SR06W	H	52.0	--	110TRCS
L023 BILLS FISH CAMP	NWSES23T06SR06W	H	36.0	--	110TRCS
L024 HARRY PRASSENOS	NWNES35T06SR06W	H	238	--	122PCGL
L025 EDSEL GUNNER	NWSES35T06SR06W	H	360	--	122PCGL
L026 FRANK WILKERSON	NENWS35T06SR06W	-	47.0	--	110TRCS
L027 J B MATHEWS	NESES35T06SR06W	H	252	--	122PCGL
L028 CHARLES LANDER	SWNWS36T06SR06W	H	660	20.00	122PCGL
L029 GRAHAM FISHCAMP	SESWS35T06SR06W	H	61.0	--	110TRCS
L031 BILLS FISH CAMP	NWSES23T06SR06W	H	231	--	122PCGL
L032 ESCATAWPA UTIL DIST	NWNES26T06SR06W	P	245.	265.00	121GRMF
L033 JACKSON COUNTY	NWNES26T06SR06W	H	355.	--	122PCGL
L035 NORMAN SCOTT	NWSWS43T06SR06W	H	252.	--	121GRMF
L037 A O DUMAS	SESES43T06SR06W	H	231	--	--
L039 DEWEY BROADUS	NWSES26T06SR06W	H	221	2.00	--
L040 R SASSER	NENWS35T06SR06W	H	262.	--	121GRMF
L041 MIKE CUNNINGHAM	NWNES35T06SR06W	H	236.	--	121GRMF
L042 T D FURGERSON	SESWS35T06SR06W	H	651	--	--
L043 A E MARINO	SWSWS25T06SR06W	H	241	--	--
L044 A D MORRISON	NWNWS25T06SR06W	H	141	--	--
L045 UNKNOWN	SENWS26T05SR06W	H	370	--	122MOCN
L047 D E WESTBROOK	NENWS26T06SR06W	H	370	--	122MOCN
L048 F D ROBERTSON	SWSWS36T06SR06W	H	157	--	122MOCN
L050 A C FRANKLIN	SENWS35T06SR06W	H	220	--	--
L051 M F PARKINSON	SWNWS35T06SR06W	H	357	--	--
L052 A W SHERMAN	NWSES26T06SR06W	H	241	--	--
L053 BASTON HOMES	NESWS35T06SR06W	H	252	--	121GRMF
L054 T L DELASHMENT	NWNWS35T06SR06W	H	352	--	122MOCN
L055 J D KELLY	NWNWS35T06SR06W	H	357	--	122MOCN
L056 JAMES D CROWE	SWNWS36T06SR06W	H	245	--	--
L057 DONALD WILSON	SESWS36T06SR06W	H	496	12.00	122MOCN
L059 P J TILURAN	NESES35T06SR06W	H	250	--	122MOCN
L070 F L FREDRICK	SESWS25T06SR06W	H	70.0	--	121CRNL
L071 YOUNG	NWSES35T06SR06W	H	60.0	--	121CRNL
L081 A G CHAMPINE	SESWS43T06SR06W	H	264	--	122PCGL
L086 HARRY SELF JR	NWNES25T06SR06W	H	219	--	121GRMF
L088 A NOLF	NWNES35T06SR06W	H	252	--	121GRMF

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
L089 JAMES E HOWARD	-----S35T06SR06W	H	250	--	121GRMF
L090 R E SMITH	-----S35T06SR06W	H	255	--	121GRMF
L094 RAY GRIERSON	NENES26T06SR06W	H	362	10.00	121GRMF
L095 KEN KNOTTS	NENES26T06SR06W	H	264	10.00	121GRMF
L096 PAT DUGAN	NWSWS35T06SR06W	H	360	--	121GRMF
L097 OWEN WELLS	SWNWS35T06SR06W	H	679	6.00	122MOCN
L106 JESSE WHITE	SWSES35T06SR06W	H	355	--	121GRMF
L110 BILLY MATHEWS	NENWS25T06SR06W	H	275	15.00	122MOCN
L112 HAROLD YOUNG	NENWS35T06SR06W	H	245	12.00	121GRMF
L116 RED LADNER	SWSES43T06SR06W	U	961	45.00	122MOCN
L118 AUSTIN ROBERTS	NENES25T06SR06W	H	321	8.00	122MOCN
L119 INTL PAPER	SESES25T06SR06W	N	242	85.00	121GRMF
L140 STEWART FREDERICK	NESWS36T06SR06W	H	126	10	121GRMF
L141 M E GUESS	SWSES25T06SR06W	H	247	8.5	121GRMF
P001 J BOUNDS	NWSES01T07SR06W	S	450	60.00	122MOCN
P003 STEWARD BREADLY	NENES02T07SR06W	H	372	--	122MOCN
P004 N G PRASSENOS	NENES02T07SR06W	U	60.0	--	--
P005 C O MILLER	NENWS01T07SR06W	H	373.	4.00	121GRMF
P006 GARNER ROBERTS	NESWS02T07SR06W	H	966	--	122PCGL
P007 J G ROBERTS	SWNES02T07SR06W	H	90.0	--	112ALVM
P008 PAUL ROBERTS	NESWS02T07SR06W	H	693.	--	122PCGL
P009 FRED NOLF	SWSES01T07SR06W	H	59.0	--	112ALVM
P153 MR NELSON	SENWS02T07SR06W	H	64.0	--	112TRCS
P154 H C COOPER	NENWS02T07SR06W	-	89.0	--	112TRCS
P156 A R COKER	NESES02T07SR06W	H	72.0	--	112ALVM
P169 D W CRAWLEY	NENES02T07SR06W	H	75.0	--	--
P171 M L CROWLEY	NENES02T07SR06W	H	76.0	--	--
P172 C T COOLEY	NWSWS01T07SR06W	H	367	--	--
P174 REV R E PLATT	NENES02T07SR06W	H	546	--	--
P182 R W DURHAM	SWSES01T07SR06W	H	687	--	--
P186 C B WILKERSON	-----S01T07SR06W	H	253	--	--
P187 JOHN STUBBS	NENES02T07SR06W	H	63.0	--	--
P195 A D MORRISON	NENWS01T07SR06W	H	136	--	--
P197 SHERRY RICHARDS	SENES02T07SR06W	H	78.0	--	--
P200 C B BLACKWELL	--NWS01T07SR06W	H	374	--	--
P201 LOUIS THOMPKINS	NESWS02T07SR06S	H	68.0	--	--
P210 LOUIS CUMBUST	NWSES02T07SR06W	H	94.0	4.00	--
P259 ALVIN CHARLTON	NESWS01T07SR06W	H	412	10.00	121GRMF
P260 G S MC KNOWN	NESES02T07SR06W	H	257	9.00	121GRMF
P270 HAROLD MONROE	SWNES02T07SR06W	H	346	--	122PCGL

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
P274 GEO MCDONALD	----S02T07SR06W	H	356	4.00	121GRMF
P292 THOMPSON	NWNWS01T07SR06W	I	80.0	10.00	121CRNL
P305 MYRA WARE	NESES02T07SR06W	H	78.0	7.00	121CRNL
P310 ANDY WHITEHEAD	NWNES12T07SR06W	H	174	--	121GRMF
P356 F R GATTI	----S08T08SR06W	-	804	75.00	122PCGL
P389 MOSS POINT MARINE	----S11T07SR06W	U	170.	100.00	121GRMF
P415 BERNICE HAVARD	NWSWS02T07SR06W	I	95.	85.	121CRNL
P416 BERNICE HAVARD	SWNWS02T07SR06W	I	95.	85.	121CRNL
P419 BURNICE HAVARD	SWNWS02T07SR06W	I	100.	85.	121CRNL

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
L008 ALVIN LOVE	NESES14T06SR06W	H	956	30.00	122PCGL
L009 LIONELL SMITH	NWSES14T06SR06W	H	957.	--	122PCGL
L010 H L PORTER	SESES14T06SR06W	H	231	--	122PCGL
L011 H L PORTER	SWSWS14T06SR06W	H	26.0	--	110TRCS
L012 JOSEPH CHWALNY	NENWS23T06SR06W	H	59.0	--	121CRNL
L018 D W ALLEN	SENES23T06SR06W	H	245	--	121GRMF
L019 JESSIE ALLEN	SWSWS23T06SR06W	H	385	--	122PCGL
L020 FAIRLEY&BECKMAN	NWSES43T06SR06W	H	210	--	122PCGL
L021 WOODROW PERRY	NENWS26T06SR06W	H	367	3.00	122PCGL
L022 BILLS FISH CAMP	NWSES23T06SR06W	H	52.0	--	110TRCS
L023 BILLS FISH CAMP	NWSES23T06SR06W	H	36.0	--	110TRCS
L024 HARRY PRASSENOS	NWNES35T06SR06W	H	238	--	122PCGL
L025 EDSEL GUNNER	NWSES35T06SR06W	H	360	--	122PCGL
L026 FRANK WILKERSON	NENWS35T06SR06W	-	47.0	--	110TRCS
L027 J B MATHEWS	NESES35T06SR06W	H	252	--	122PCGL
L028 CHARLES LANDER	SWNWS36T06SR06W	H	660	20.00	122PCGL
L029 GRAHAM FISHCAMP	SESWS35T06SR06W	H	61.0	--	110TRCS
L031 BILLS FISH CAMP	NWSES23T06SR06W	H	231	--	122PCGL
L032 ESCATAWPA UTIL DIST	NWNES26T06SR06W	P	245.	265.00	121GRMF
L033 JACKSON COUNTY	NWNES26T06SR06W	H	355.	--	122PCGL
L034 GLENN D YAWN	SENES24T06SR06W	H	357	--	--
L035 NORMAN SCOTT	NWSWS43T06SR06W	H	252.	--	121GRMF
L036 EDNA THORNTON	NWNES23T06SR06W	H	234	--	--
L037 A O DUMAS	SESES43T06SR06W	H	231	--	--
L039 DEWEY BROADUS	NWSES26T06SR06W	H	221	2.00	--
L040 R SASSER	NENWS35T06SR06W	H	262.	--	121GRMF
L041 MIKE CUNNINGHAM	NWNES35T06SR06W	H	236.	--	121GRMF
L042 T D FURGERSON	SESWS35T06SR06W	H	651	--	--
L043 A E MARINO	SWSWS25T06SR06W	H	241	--	--
L044 A D MORRISON	NWNWS25T06SR06W	H	141	--	--
L045 UNKNOWN	SENWS26T05SR06W	H	370	--	122MOCN
L047 D E WESTBROOK	NENWS26T06SR06W	H	370	--	122MOCN
L048 F D ROBERTSON	SWSWS36T06SR06W	H	157	--	122MOCN
L050 A C FRANKLIN	SENWS35T06SR06W	H	220	--	--
L051 M F PARKINSON	SWNWS35T06SR06W	H	357	--	--
L052 A W SHERMAN	NWSES26T06SR06W	H	241	--	--
L053 BASTON HOMES	NESWS35T06SR06W	H	252	--	121GRMF
L054 T L DELASHMENT	NWNWS35T06SR06W	H	352	--	122MOCN
L055 J D KELLY	NWNWS35T06SR06W	H	357	--	122MOCN
L056 JAMES D CROWE	SWNWS36T06SR06W	H	245	--	--

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
L057 DONALD WILSON	SESWS36T06SR06W	H	496	12.00	122MOCN
L059 P J TILURAN	NESES35T06SR06W	H	250	--	122MOCN
L060 H C MILLER	NWNES23T06SR06W	H	312	--	121GRMF
L061 LOUIS SADNIES	SENWS39T06SR06W	H	215	--	121GRMF
L070 F L FREDRICK	SESWS25T06SR06W	H	70.0	--	121CRNL
L071 YOUNG	NWSES35T06SR06W	H	60.0	--	121CRNL
L075 ROBERT WEBB	----S39T06SR06W	H	520	--	122PCGL
L077 O H ROBERTS	NESWS24T06SR06W	H	173.	--	121GRMF
L081 A G CHAMPINE	SESWS43T06SR06W	H	264	--	122PCGL
L085 BILL MATHEWS	NESES24T06SR06W	H	240	--	121GRMF
L086 HARRY SELF JR	NWNES25T06SR06W	H	219	--	121GRMF
L088 A NOLF	NWNES35T06SR06W	H	252	--	121GRMF
L089 JAMES E HOWARD	----S35T06SR06W	H	250	--	121GRMF
L090 R E SMITH	----S35T06SR06W	H	255	--	121GRMF
L093 DAN HYATT	NESES20T06SR06W	H	237	--	121GRMF
L094 RAY GRIERSON	NENES26T06SR06W	H	362	10.00	121GRMF
L095 KEN KNOTTS	NENES26T06SR06W	H	264	10.00	121GRMF
L096 PAT DUGAN	NWSWS35T06SR06W	H	360	--	121GRMF
L097 OWEN WELLS	SWNWS35T06SR06W	H	679	6.00	122MOCN
L106 JESSE WHITE	SWSES35T06SR06W	H	355	--	121GRMF
L107 AUSTIN ROBERTS	NESWS24T06SR06W	H	263	20.00	121GRMF
L108 AUSTIN ROBERTS	NWSES24T06SR06W	H	258	10.00	121GRMF
L110 BILLY MATHEWS	NENWS25T06SR06W	H	275	15.00	122MOCN
L112 HAROLD YOUNG	NENWS35T06SR06W	H	245	12.00	121GRMF
L113 A ROBERTS	SENWS24T06SR06W	H	265	7.00	121GRMF
L116 RED LADNER	SWSES43T06SR06W	U	961	45.00	122MOCN
L118 AUSTIN ROBERTS	NENES25T06SR06W	H	321	8.00	122MOCN
L119 INTL PAPER	SESES25T06SR06W	N	242	85.00	121GRMF
L126 SEA CHICK	--NWS23T06SR06W	-	--	--	122PCGL
L128 SEA CHICK	S24T06SR06W	Q	--	900	122MOCN
L129 SEA CHICK	NWS24T063R06W	Q	1420.	1000	122HBRG
L130 SEA CHICK	S24T06SR06W	Q	--	1200	122MOCN
L131 SEA CHICK	S24T06SR06W	Q	--	1500	122MOCN
L138 AUSTIN ROBERTS	NWSES24T06SR06W	H	270	7	121GRMF
L140 STEWART FREDERICK	NESWS36T06SR06W	H	126	10	121GRMF
L141 M E GUESS	SWSES25T06SR06W	H	247	8.5	121GRMF
L142 AUSTIN ROBERTS	NESWS24T06SR06W	H	266	9	121GRMF
L143 AUSTIN ROBERTS	NESWS24T06SR06W	H	270	8	121GRMF
L144 S A McINNIS JR	SESES24T06SR06W	H	143	15	121GRMF
M030 CLAIBORNE KOCH	SWSWS31T06SR05W	H	640	--	122MOCN

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
M045 ERNEST JACKSON	NESES31T06SR04W	H	69.0	--	--
M049 FRANK VICE	SWNWS32T06SR05W	H	152	--	--
M050 P WILLARD	NWSWS32T06SR05W	H	202	--	--
M054 MORRIS YOUNG	NESES31T06SR04W	H	71.0	--	--
M078 E ELKIN	SESWS31T07SR05W	H	230	--	122MOCN
M107 JIM RODGERS	SESES31T06SR05W	H	590.	--	122PCGL
M110 MAX PORTER	NWSWS32T06SR05W	H	45.0	--	121CRNL
M112 WALTER ROBERTS	NESWS30T06SR05W	H	726.	7.00	122PCGL
M114 JIM ROGERS	SWNES31T06SR05W	H	590	--	122PCGL
M118 FRANK EVERETT	SESWS31T06SR05W	H	154	--	121GRMF
M129 D H HARRISON	NWSWS31T06SR05W	H	253.	7.00	121GRMF
M136 HINTON CONST CO	NESWS31T06SR05W	H	45.0	6.00	121CRNL
M159 CARLEY DEES	SWNES31T06SR05W	H	573	--	122PCGL
M160 WILLIAM KIBBY	SWNWS31T06SR05W	H	142	--	121GRMF
M178 LARRY YOUNG	SWSWS29T06SR05W	H	65.0	5.00	121CRNL
M180 LARRY YOUNG	SWSWS29T06SR05W	H	131	6.00	121CRNL
M181 LARRY YOUNG	SWSWS29T06SR05W	H	154	10.00	121CRNL
M183 BILLY R WILKS	SENWS31T06SR05W	H	400	25.00	121GRMF
M205 CHARLES GERMAN	NESWS30T06SR05W	H	105	--	121CRNL
M213 JERRY PRICE	----S31T06SR05W	H	153	10.00	121GRMF
M226 W C SWOPE	SESES30T06SR05W	H	170.	--	121CRNL
M266 JACK LOGAN	SWSES31T06SR05W	H	720.	10	122PCGL
M268 SHELBY HOLLAND	NESES07T06SR05W	H	298	10	121GRMF
M320 MALCOM ROGERS	SESES31T06SR05W	H	166	7	121GRMF
P001 J BOUNDS	NWSES01T07SR06W	S	450	60.00	122MOCN
P003 STEWARD BREADLY	NENES02T07SR06W	H	372	--	122MOCN
P004 N G PRASSENOS	NENES02T07SR06W	U	60.0	--	--
P005 C O MILLER	NENWS01T07SR06W	H	373.	4.00	121GRMF
P006 GARNER ROBERTS	NESWS02T07SR06W	H	966	--	122PCGL
P007 J G ROBERTS	SWNES02T07SR06W	H	90.0	--	112ALVM
P008 PAUL ROBERTS	NESWS02T07SR06W	H	693.	--	122PCGL
P009 FRED NOLF	SWSES01T07SR06W	H	59.0	--	112ALVM
P010 MACKIE ROGERS	NENWS12T07SR06W	H	616.	--	121GRMF
P011 NOLAND SMITH	SWNWS12T07SR06W	H	532	--	122PCGL
P012 E H CROPP	NWSES12T07SR06W	H	609	--	122MOCN
P013 CLEO GRAHAM	NENWS12T07SR06W	H	630	--	122PCGL
P014 J CUNNINGHAM	SENWS12T07SR06W	U	328	--	121GRMF
P015 W O GREENOUGH	NWSES12T07SR06W	H	336	--	122MOCN
P016 A B EVANS	SWNES12T07SR06W	H	33.0	--	112ALVM
P017 J E NELSON	SENES11T07SR06W	H	25.0	--	112ALVM

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
P018 A H GREENOUGH	SESES11T07SR06W	H	174.	--	121CRNL
P019 JOHN GILL	SESWS12T07SR06W	H	343	--	121GRMF
P020 C J RAY	NENWS09T07SR06W	H	315	--	122MOCN
P153 MR NELSON	SENWS02T07SR06W	H	64.0	--	112TRCS
P154 H C COOPER	NENWS02T07SR06W	-	89.0	--	112TRCS
P156 A R COKER	NESES02T07SR06W	H	72.0	--	112ALVM
P162 C STRINGFELLOW	NENWS09T07SR06W	H	308	--	121GRMF
P164 ARDEN CUNNINGHM	NENWS12T07SR06W	H	386	--	121GRMF
P169 D W CRAWLEY	NENES02T07SR06W	H	75.0	--	--
P170 J J ROGERS	SWSWS12T07SR06W	H	345	--	--
P171 M L CROWLEY	NENES02T07SR06W	H	76.0	--	--
P172 C T COOLEY	NWSWS01T07SR06W	H	367	--	--
P173 J P MCGEE	NWNWS12T07SR06W	H	336	--	--
P174 REV R E PLATT	NENES02T07SR06W	H	546	--	--
P179 JESSE LENNEP JR	SWNES12T07SR06W	H	336	--	--
P182 R W DURHAM	SWSES01T07SR06W	H	687	--	--
P184 OTIS BARNES	NESWS11T07SR06W	H	326	--	--
P185 E N DALE	NWSES11T07SR06W	H	325.	--	121GRMF
P186 C B WILKERSON	----S01T07SR06W	H	253	--	--
P187 JOHN STUBBS	NENES02T07SR06W	H	63.0	--	--
P192 JOHN DUPONT	SENES11T07SR06W	H	336	--	--
P195 A D MORRISON	NENWS01T07SR06W	H	136	--	--
P197 SHERRY RICHARDS	SENES02T07SR06W	H	78.0	--	--
P200 C B BLACKWELL	--NWS01T07SR06W	H	374	--	--
P201 LOUIS THOMPKINS	NESWS02T07SR06S	H	68.0	--	--
P202 J W WALTON	NWSWS12T07SR06W	H	396	10.00	--
P204 A W HEAD	NWNES12T07SR06W	H	357	9.00	--
P210 LOUIS CUMBUST	NWSES02T07SR06W	H	94.0	4.00	--
P228 JACKSON COUNTY	SESWS12T07SR06W	U	415.	200.00	121GRMF
P259 ALVIN CHARLTON	NESWS01T07SR06W	H	412	10.00	121GRMF
P260 G S MC KNOWN	NESES02T07SR06W	H	257	9.00	121GRMF
P270 HAROLD MONROE	SWNES02T07SR06W	H	346	--	122PCGL
P271 ABBY GRIFFIN	NWSES12T07SR06W	H	68.0	4.00	121CRNL
P274 GEO MCDONALD	----S02T07SR06W	H	356	4.00	121GRMF
P275 O G JOHNSTON	NWSWS10T07SR06W	H	215	--	121GRMF
P276 CLYDE OLIVER	NESWS12T07SR06W	H	69.	--	121GRMF
P285 A R CREWS	NWSES12T07SR06W	H	68.	--	121CRNL
P292 THOMPSON	NWNWS01T07SR06W	I	80.0	10.00	121CRNL
P297 JAS TAYLOR	SWSWS02T07SR06W	H	359	6.00	122PCGL
P300 S W SMITH	NENES11T07SR06W	H	533.	7.00	122PCGL

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
P305 MYRA WARE	NESES02T07SR06W	H	78.0	7.00	121CRNL
P306 HAYDELL	----S12T07SR06W	H	252	--	121GRMF
P309 N L BOOKER	NWSES12T07SR06W	H	609	--	122MOCN
P310 ANDY WHITEHEAD	NWNES12T07SR06W	H	174	--	121GRMF
P330 JACK LOWMAN	NWSES12T07SR06W	H	829	9.00	122PCGL
P335 G H MARTIN	----S10T07SR06W	H	346	--	121GRMF
P342 ERWIN & CO	SESWS12T08SR06W	I	90.0	15.00	121CRNL
P356 F R GATTI	----S08T08SR06W	-	804	75.00	122PCGL
P369 OTIS BARNES	NESWS11T07SR07W	H	392	10.00	121GRMF
P389 MOSS POINT MARINE	----S11T07SR06W	U	170.	100.00	121GRMF
P415 BERNICE HAVARD	NWSWS02T07SR06W	I	95.	85.	121CRNL
P416 BERNICE HAVARD	SWNWS02T07SR06W	I	95.	85.	121CRNL
P419 BURNICE HAVARD	SWNWS02T07SR06W	I	100.	85.	121CRNL
P447 HERMAN CROINER	----S01T07SR06W	H	201	9	121GRMF
Q008 JAMES T JONES	NWSES06T07SR05W	H	39.0	--	112TRCS
Q009 RAY J DELMAS	SENWS06T07SR05W	H	258	--	122MOCN
Q201 J T JONES	NENES06T07SR05W	H	236	--	121GRMF
Q205 BILL HATLEY	NENES06T07SR05W	H	241	--	121GRMF
Q220 GARY SMITH	SWSWS06T07SR05W	H	312	--	--
Q254 CH OF LORD JESUS	NENES06T07SR05W	H	257.	--	121GRMF
Q292 CHU OF LORD JES	NENES06T07SR05W	H	257.	--	121GRMF
Q330 VIRGIL BERNT	NWNWS06T07SR05W	H	152	--	121CRNL
Q371 R E RAMSEY	NWNES06T07SR05W	H	153	--	121GRMF
Q380 W A STANLEY	NWNWS06T07SR05W	H	152	--	121GRMF
Q390 R E RAMSEY	NENWS06T07SR05W	H	153	--	121GRMF
Q457 ESCATAWPA UTIL	SES06T07SR05W	-	--	--	--

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
L003 P E EHLERS	NWSES12T06SR06W	H	295	--	122PCGL
L004 H W HUDSON	NWSES12T06SR06W	H	336	--	122PCGL
L005 J H LACY	NESES11T06SR06W	H	307	--	122PCGL
L006 R R BULLOCK	NESWS13T06SR06W	H	32.0	--	110TRCS
L007 ED BULLOCK	NESWS13T06SR07W	H	306	--	122PCGL
L008 ALVIN LOVE	NESES14T06SR06W	H	956	30.00	122PCGL
L009 LIONELL SMITH	NWSES14T06SR06W	H	957.	--	122PCGL
L010 H L PORTER	SESES14T06SR06W	H	231	--	122PCGL
L011 H L PORTER	SWSWS14T06SR06W	H	26.0	--	110TRCS
L012 JOSEPH CHWALNY	NENWS23T06SR06W	H	59.0	--	121CRNL
L016 T B BIRDSONG	NESES40T06SR06W	H	437.	--	121GRMF
L017 T B BIRDSONG	NESES40T06SR06W	H	405	--	122PCGL
L018 D W ALLEN	SENES23T06SR06W	H	245	--	121GRMF
L019 JESSIE ALLEN	SWSWS23T06SR06W	H	385	--	122PCGL
L020 FAIRLEY&BECKMAN	NWSES43T06SR06W	H	210	--	122PCGL
L021 WOODROW PERRY	NENWS26T06SR06W	H	367	3.00	122PCGL
L022 BILLS FISH CAMP	NWSES23T06SR06W	H	52.0	--	110TRCS
L023 BILLS FISH CAMP	NWSES23T06SR06W	H	36.0	--	110TRCS
L024 HARRY PRASSENOS	NWNES35T06SR06W	H	238	--	122PCGL
L025 EDSEL GUNNER	NWSES35T06SR06W	H	360	--	122PCGL
L026 FRANK WILKERSON	NENWS35T06SR06W	-	47.0	--	110TRCS
L027 J B MATHEWS	NESES35T06SR06W	H	252	--	122PCGL
L028 CHARLES LANDER	SWNWS36T06SR06W	H	660	20.00	122PCGL
L029 GRAHAM FISHCAMP	SESWS35T06SR06W	H	61.0	--	110TRCS
L030 W A ROGERS	SWNES40T06SR06W	H	67.0	--	121CRNL
L031 BILLS FISH CAMP	NWSES23T06SR06W	H	231	--	122PCGL
L032 ESCATAWPA UTIL DIST	NWNES26T06SR06W	P	245.	265.00	121GRMF
L033 JACKSON COUNTY	NWNES26T06SR06W	H	355.	--	122PCGL
L034 GLENN D YAWN	SENES24T06SR06W	H	357	--	--
L035 NORMAN SCOTT	NWSWS43T06SR06W	H	252.	--	121GRMF
L036 EDNA THORNTON	NWNES23T06SR06W	H	234	--	--
L037 A O DUMAS	SESES43T06SR06W	H	231	--	--
L039 DEWEY BROADUS	NWSES26T06SR06W	H	221	2.00	--
L040 R SASSER	NENWS35T06SR06W	H	262.	--	121GRMF
L041 MIKE CUNNINGHAM	NWNES35T06SR06W	H	236.	--	121GRMF
L042 T D FURGERSON	SESWS35T06SR06W	H	651	--	--
L043 A E MARINO	SWSWS25T06SR06W	H	241	--	--
L044 A D MORRISON	NWNWS25T06SR06W	H	141	--	--
L045 UNKNOWN	SENWS26T05SR06W	H	370	--	122MOCN
L047 D E WESTBROOK	NENWS26T06SR06W	H	370	--	122MOCN

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
L048 F D ROBERTSON	SWSWS36T06SR06W	H	157	--	122MOCN
L050 A C FRANKLIN	SENWS35T06SR06W	H	220	--	--
L051 M F PARKINSON	SWNWS35T06SR06W	H	357	--	--
L052 A W SHERMAN	NWSES26T06SR06W	H	241	--	--
L053 BASTON HOMES	NESWS35T06SR06W	H	252	--	121GRMF
L054 T L DELASHMENT	NWNWS35T06SR06W	H	352	--	122MOCN
L055 J D KELLY	NWNWS35T06SR06W	H	357	--	122MOCN
L056 JAMES D CROWE	SWNWS36T06SR06W	H	245	--	--
L057 DONALD WILSON	SESWS36T06SR06W	H	496	12.00	122MOCN
L058 W T TRIPLETT	NWSES11T06SR06W	H	298	10.00	122MOCN
L059 P J TILURAN	NESES35T06SR06W	H	250	--	122MOCN
L060 H C MILLER	NWNES23T06SR06W	H	312	--	121GRMF
L061 LOUIS SADNIES	SENWS39T06SR06W	H	215	--	121GRMF
L070 F L FREDRICK	SESWS25T06SR06W	H	70.0	--	121CRNL
L071 YOUNG	NWSES35T06SR06W	H	60.0	--	121CRNL
L073 H H ROBBINS	NESWS11T06SR06W	H	447	7.00	122PCGL
L074 MARVIN YAWN	SESWS11T06SR06W	H	453	6.00	122PCGL
L075 ROBERT WEBB	----S39T06SR06W	H	520	--	122PCGL
L077 O H ROBERTS	NESWS24T06SR06W	H	173.	--	121GRMF
L079 FRED MCNEESE	SWSES12T06SR06W	H	330	--	121GRMF
L080 JOE BULLOCK	SWNES13T06SR06W	H	115	--	121GRMF
L081 A G CHAMPINE	SESWS43T06SR06W	H	264	--	122PCGL
L082 GEO MCDONALD	NWNES13T06SR06W	H	672.	--	122PCGL
L085 BILL MATHEWS	NESES24T06SR06W	H	240	--	121GRMF
L086 HARRY SELF JR	NWNES25T06SR06W	H	219	--	121GRMF
L088 A NOLF	NWNES35T06SR06W	H	252	--	121GRMF
L089 JAMES E HOWARD	----S35T06SR06W	H	250	--	121GRMF
L090 R E SMITH	----S35T06SR06W	H	255	--	121GRMF
L093 DAN HYATT	NESES20T06SR06W	H	237	--	121GRMF
L094 RAY GRIERSON	NENES26T06SR06W	H	362	10.00	121GRMF
L095 KEN KNOTTS	NENES26T06SR06W	H	264	10.00	121GRMF
L096 PAT DUGAN	NWSWS35T06SR06W	H	360	--	121GRMF
L097 OWEN WELLS	SWNWS35T06SR06W	H	679	6.00	122MOCN
L098 CECIL FULTON	NENWS13T06SR06W	H	111	10.00	121CRNL
L101 DAVE TOLBY	NESWS13T06SR06W	H	682	10.00	122MOCN
L104 MISS POWER CO	NWSWS11T06SR06W	-	--	--	--
L106 JESSE WHITE	SWSES35T06SR06W	H	355	--	121GRMF
L107 AUSTIN ROBERTS	NESWS24T06SR06W	H	263	20.00	121GRMF
L108 AUSTIN ROBERTS	NWSES24T06SR06W	H	258	10.00	121GRMF
L109 MANNING HOMES	NENWS13T06SR06W	H	60.0	12.00	121CRNL

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
L110 BILLY MATHEWS	NENWS25T06SR06W	H	275	15.00	122MOCN
L111 GENE ALMOND	SWSES12T06SR06W	H	687.	12.00	122PCGL
L112 HAROLD YOUNG	NENWS35T06SR06W	H	245	12.00	121GRMF
L113 A ROBERTS	SENWS24T06SR06W	H	265	7.00	121GRMF
L114 MISS POWER CO	NWSWS11T06SR06W	E	313	500.00	122PCGL
L116 RED LADNER	SWSES43T06SR06W	U	961	45.00	122MOCN
L118 AUSTIN ROBERTS	NENES25T06SR06W	H	321	8.00	122MOCN
L119 INTL PAPER	SESES25T06SR06W	N	242	85.00	121GRMF
L120 ROBERT EARL AMNETT	----S12T06SR06W	H	285	10.00	121GRMF
L124 J D BULLOCK	SWNES13T06SR06W	H	200.	10.	121GRMF
L126 SEA CHICK	--NWS23T06SR06W	-	--	--	122PCGL
L127 MISS POWER CO	NESWS11T06SR06W	N	686	503	122PCGL
L128 SEA CHICK	S24T06SR06W	Q	--	900	122MOCN
L129 SEA CHICK	NWS24T063R06W	Q	1420.	1000	122HBRG
L130 SEA CHICK	S24T06SR06W	Q	--	1200	122MOCN
L131 SEA CHICK	S24T06SR06W	Q	--	1500	122MOCN
L136 EUGENE ALMOND	SWSES12T06SR06W	H	325.	12	122PCGL
L138 AUSTIN ROBERTS	NWSES24T06SR06W	H	270	7	121GRMF
L140 STEWART FREDERICK	NESWS36T06SR06W	H	126	10	121GRMF
L141 M E GUESS	SWSES25T06SR06W	H	247	8.5	121GRMF
L142 AUSTIN ROBERTS	NESWS24T06SR06W	H	266	9	121GRMF
L143 AUSTIN ROBERTS	NESWS24T06SR06W	H	270	8	121GRMF
L144 S A McINNIS JR	SESES24T06SR06W	H	143	15	121GRMF
L145 FRANK MICHEL	--NES13T06SR06W	H	106	5	121GRMF
L146 MS POWER CO	----S11T06SR06W	H	85	--	121GRMF
L147 WILLIE MAC MALONE	NESES11T06SR06W	H	300	7	121GRMF
L148 WILLIE MAC MALONE	NESES11T06SR06W	H	316	--	121GRMF
M010 E W CRONIER	NWNWS18T06SR05W	H	31.0	--	110TRCS
M029 ELBERT WHATLEY	NWSWS32T06SR05W	H	152.	--	121GRMF
M030 CLAIBORNE KOCH	SWSWS31T06SR05W	H	640	--	122MOCN
M031 ROBERT EASLEY	SENWS20T06SR05W	H	388	3.00	--
M032 LEE WATKINS	SESWS32T06SR05W	H	199	--	--
M033 DUB PIERCE	SENES32T06SR05W	H	451.	6.00	121GRMF
M034 J C BROOKS	SWSES34T06SR05W	H	250	--	121GRMF
M036 GLENN BECKHAM	SWNWS32T06SR05W	H	151	--	--
M038 R CARPENTER	SENES32T06SR05W	H	178.	--	121GRMF
M040 CARLTON VICE	SESWS29T06SR05W	H	178	--	--
M042 A D KINNAN	SWNES29T06SR05W	H	252.	--	121GRMF
M044 CARL VICE	SWNES32T06SR05W	H	168	--	121GRMF
M045 ERNEST JACKSON	NESES31T06SR04W	H	69.0	--	--

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
M049 FRANK VICE	SWNWS32T06SR05W	H	152	--	--
M050 P WILLARD	NWSWS32T06SR05W	H	202	--	--
M051 LEON BOREN	NENWS32T06SR05W	H	249	--	--
M054 MORRIS YOUNG	NESES31T06SR04W	H	71.0	--	--
M057 PAT PATTERSON	SENWS32T06SR05W	H	147	--	121GRMF
M058 SMITH AND KREBS	NENWS32T06SR05W	H	266.	--	121GRMF
M070 FELIX ROBERTS	SESWS30T06SR05W	H	47.0	10.00	121CRNL
M072 J A MAGEE	NWNES18T06SR05W	H	155	--	121CRNL
M073 W E WILSON	SWNES29T06SR05W	H	262.	--	121GRMF
M075 OLLIE VICE JR	NESES32T06SR05W	H	177	--	121GRMF
M076 MASON & PARKER	SESES29T06SR05W	H	217	--	122MOCN
M078 E ELKIN	SESWS31T07SR05W	H	230	--	122MOCN
M083 BOWERS L MAY	SENWS29T06SR05W	H	270	10.00	122PCGL
M086 SERENITY GARDEN	NWNWS18T06SR05W	H	110.	5.00	121GRMF
M087 A E PIERCE	NWSES32T06SR05W	H	238.	--	121GRMF
M090 E E DEARING	NWSWS32T06SR05W	H	204	--	121GRMF
M092 GERALD SHANK	SENES29T06SR05W	H	154	--	121GRMF
M093 D S BARFIELD	SENES29T06SR05W	H	273	--	122PCGL
M100 JIM WRIGHT	NENWS32T06SR05W	H	460	--	122PCGL
M107 JIM RODGERS	SESES31T06SR05W	H	590.	--	122PCGL
M110 MAX PORTER	NWSWS32T06SR05W	H	45.0	--	121CRNL
M112 WALTER ROBERTS	NESWS30T06SR05W	H	726.	7.00	122PCGL
M114 JIM ROGERS	SWNES31T06SR05W	H	590	--	122PCGL
M115 TOM THAMES	SWSES29T06SR05W	H	271	8.00	122PCGL
M116 T B MORGAN	NENWS29T06SR05W	H	110	6.00	121GRMF
M118 FRANK EVERETT	SESWS31T06SR05W	H	154	--	121GRMF
M121 J W HUDDLESTON	NESWS29T06SR05W	H	264	--	122PCGL
M129 D H HARRISON	NWSWS31T06SR05W	H	253.	7.00	121GRMF
M136 HINTON CONST CO	NESWS31T06SR05W	H	45.0	6.00	121CRNL
M140 J L ALEXANDER	SESWS29T06SR05W	H	278.	--	121GRMF
M141 J L ALEXANDER	SWSES29T06SR05W	H	278	--	122PCGL
M151 DELBERT GREEN	SWSES29T06SR05W	H	190.	10.00	121GRMF
M153 C E VICE	SWNES32T06SR05W	H	447.	--	121GRMF
M155 ERNEST CROPP	SWSES29T06SR05W	H	440	10.00	121GRMF
M156 TALMADGE JASPER	SWSES29T06SR05W	H	270	--	121GRMF
M159 CARLEY DEES	SWNES31T06SR05W	H	573	--	122PCGL
M160 WILLIAM KIBBY	SWNWS31T06SR05W	H	142	--	121GRMF
M164 A W MEADOWS	SESWS29T06SR05W	H	120	21.00	121GRMF
M166 PASCO REALTY CO	SWNES29T06SR05W	H	269	12.00	121GRMF
M167 D L BARFIELD	SWSWS29T06SR05W	H	279	--	121GRMF

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
M168 LARRY YOUNG	----S29T06SR05W	H	154	10.00	121GRMF
M169 JAMES SUMRALL	NWSES29T06SR05W	H	276	--	121GRMF
M170 MAX MOORMAN	SWNES29T06SR05W	H	237	--	121GRMF
M173 HELENA PRES CHR	SWSES29T06SR05W	H	262.	9.00	121GRMF
M178 LARRY YOUNG	SWSWS29T06SR05W	H	65.0	5.00	121CRNL
M179 LARRY YOUNG	----S29T06SR05W	H	154	10.00	121CRNL
M180 LARRY YOUNG	SWSWS29T06SR05W	H	131	6.00	121CRNL
M181 LARRY YOUNG	SWSWS29T06SR05W	H	154	10.00	121CRNL
M183 BILLY R WILKS	SENWS31T06SR05W	H	400	25.00	121GRMF
M189 GLYNN DAVIS	SWSWS29T06SR05W	H	149	10.00	121GRMF
M193 J C BROOKS	SENES29T06SR05W	H	258.	20.00	121GRMF
M194 JOEL SKINNER	SWNES29T06SR05W	H	250.	10.00	121GRMF
M198 JAMES SAXTON	SESWS29T06SR05W	H	248	10.00	121GRMF
M201 JOHN HUDDLESTON	SENES29T06SR05W	H	258	15.00	121CRNL
M203 GLYNN DAVIS	SWSES29T06SR05W	H	149	10.00	121CRNL
M205 CHARLES GERMAN	NESWS30T06SR05W	H	105	--	121CRNL
M208 L W WEAVER	SENWS29T06SR05W	H	270	9.00	121GRMF
M213 JERRY PRICE	----S31T06SR05W	H	153	10.00	121GRMF
M216 R W SHATTLES	----S19T06SR05W	H	315	20.00	121GRMF
M217 ROBERTS HOMES	NWSES29T06SR05W	H	270	30.00	121GRMF
M218 R&S BUILDERS	NWNES32T06SR05W	H	150	30.00	121GRMF
M226 W C SWOPE	SESES30T06SR05W	H	170.	--	121CRNL
M230 G Z BULLOCK	SESWS07T06SR05W	H	70.0	10.00	121CRNL
M266 JACK LOGAN	SWSES31T06SR05W	H	720.	10	122PCGL
M268 SHELBY HOLLAND	NESES07T06SR05W	H	298	10	121GRMF
M270 JERRY ROBERTS	S18T06SR05W	H	100	10	121GRMF
M288 JIMMY SUMRAL	NWSES29T06SR05W	H	215	15	121GRMF
M290 CLEVE BAXLEY	SWNES29T06SR05W	H	199	--	121GRMF
M293 JACKY BELK	NWNWS33T06SR05W	H	225	7	121GRMF
M316 J C BROOKS	SWSES29T06SR05W	H	252	15	121GRMF
M317 WAYNE BRANNON	SWNES29T06SR05W	H	269	--	121GRMF
M318 A T CREWS	SWNES29T06SR05W	H	230	12	121GRMF
M319 RUFUS JOHNSON	SWNES29T06SR05W	H	260	--	121GRMF
M320 MALCOM ROGERS	SESES31T06SR05W	H	166	7	121GRMF
M330 RONALD CARPENTER	SWNES32T06SR05W	H	167.	8.	121GRMF
M333 JACKSON CO BEAT 2	SWNES32T06SR05W	H	167.	8.	121GRMF
M334 CARL VICE	SWNES32T06SR05W	H	165.	6.	121GRMF
M337 REV COLEMAN	SWNWS33T06SR05W	H	165.	10.	121GRMF
M346 ROBERT LADNIER	SENES29T06SR05W	H	265.	8.	121GRMF
P001 J BOUNDS	NWSES01T07SR06W	S	450	60.00	122MOCN

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
P003 STEWARD BREADLY	NENES02T07SR06W	H	372	--	122MOCN
P004 N G PRASSENOS	NENES02T07SR06W	U	60.0	--	--
P005 C O MILLER	NENWS01T07SR06W	H	373.	4.00	121GRMF
P006 GARNER ROBERTS	NESWS02T07SR06W	H	966	--	122PCGL
P007 J G ROBERTS	SWNES02T07SR06W	H	90.0	--	112ALVM
P008 PAUL ROBERTS	NESWS02T07SR06W	H	693.	--	122PCGL
P009 FRED NOLF	SWSES01T07SR06W	H	59.0	--	112ALVM
P010 MACKIE ROGERS	NENWS12T07SR06W	H	616.	--	121GRMF
P011 NOLAND SMITH	SWNWS12T07SR06W	H	532	--	122PCGL
P012 E H CROPP	NWSES12T07SR06W	H	609	--	122MOCN
P013 CLEO GRAHAM	NENWS12T07SR06W	H	630	--	122PCGL
P014 J CUNNINGHAM	SENWS12T07SR06W	U	328	--	121GRMF
P015 W O GREENOUGH	NWSES12T07SR06W	H	336	--	122MOCN
P016 A B EVANS	SWNES12T07SR06W	H	33.0	--	112ALVM
P017 J E NELSON	SENES11T07SR06W	H	25.0	--	112ALVM
P018 A H GREENOUGH	SESES11T07SR06W	H	174.	--	121CRNL
P019 JOHN GILL	SESWS12T07SR06W	H	343	--	121GRMF
P020 C J RAY	NENWS09T07SR06W	H	315	--	122MOCN
P021 E B SHERMAN	NWNES09T07SR06W	H	1220.	--	122PCGL
P022 A LOPEZ	NWNES09T07SR06W	H	27.0	--	112ALVM
P023 E J SIMMONS	NWSWS09T07SR06W	H	40.0	--	111ALVM
P024 ALTON L GOFF	SWNES09T07SR06W	U	186	--	121GRMF
P025 W C EHLERS	NENES14T07SR06W	H	304	--	122MOCN
P026 CLINTON GILL	SWSES12T07SR06W	-	336	--	122MOCN
P027 HUBBARD BYRD	SENWS12T07SR06W	H	188	--	122MOCN
P029 ESCATAWPA SCHOL	NESES09T07SR06W	H	921	50.00	122PCGL
P030 BAILEY ANDERSON	NESES09T07SR06W	H	306	--	122MOCN
P031 G R HARDY	SWNES13T07SR06W	H	189	--	122MOCN
P032 GEO MILLENDER	SWSWS13T07SR06W	U	60.0	--	--
P033 W W WILLIAMS	SESES13T07SR06W	H	750	--	122MOCN
P034 GEORGE PLANER	SENWS09T07SR06W	H	35.0	--	111ALVM
P146 KARL WIESENBERG	--NWS07T08SR06W	H	300	--	121GRMF
P149 ESCATAWPA	SWSES12T07WR06W	U	1128	--	122PCGL
P152 TED BAILEY	NWSWS13T07SR06W	H	198	--	121GRMF
P153 MR NELSON	SENWS02T07SR06W	H	64.0	--	112TRCS
P154 H C COOPER	NENWS02T07SR06W	-	89.0	--	112TRCS
P156 A R COKER	NESES02T07SR06W	H	72.0	--	112ALVM
P161 ALTON L GOFF	SWNES09T07SR06W	H	176	--	121GRMF
P162 C STRINGFELLOW	NENWS09T07SR06W	H	308	--	121GRMF
P164 ARDEN CUNNINGHM	NENWS12T07SR06W	H	386	--	121GRMF

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
P169 D W CRAWLEY	NENES02T07SR06W	H	75.0	--	--
P170 J J ROGERS	SWSWS12T07SR06W	H	345	--	--
P171 M L CROWLEY	NENES02T07SR06W	H	76.0	--	--
P172 C T COOLEY	NWSWS01T07SR06W	H	367	--	--
P173 J P MCGEE	NWNWS12T07SR06W	H	336	--	--
P174 REV R E PLATT	NENES02T07SR06W	H	546	--	--
P179 JESSE LENNEP JR	SWNES12T07SR06W	H	336	--	--
P181 VERNON CROPP	NWNES09T07SR06W	H	304	--	121GRMF
P182 R W DURHAM	SWSES01T07SR06W	H	687	--	--
P184 OTIS BARNES	NESWS11T07SR06W	H	326	--	--
P185 E N DALE	NWSES11T07SR06W	H	325.	--	121GRMF
P186 C B WILKERSON	-----S01T07SR06W	H	253	--	--
P187 JOHN STUBBS	NENES02T07SR06W	H	63.0	--	--
P190 JAMES SAVAGE	NWSWS13T07SR06W	H	173	--	--
P192 JOHN DUPONT	SENES11T07SR06W	H	336	--	--
P193 LOTTIE ROSS	NESES09T07SR06W	H	356	--	--
P195 A D MORRISON	NENWS01T07SR06W	H	136	--	--
P197 SHERRY RICHARDS	SENES02T07SR06W	H	78.0	--	--
P200 C B BLACKWELL	--NWS01T07SR06W	H	374	--	--
P201 LOUIS THOMPKINS	NESWS02T07SR06S	H	68.0	--	--
P202 J W WALTON	NWSWS12T07SR06W	H	396	10.00	--
P204 A W HEAD	NWNES12T07SR06W	H	357	9.00	--
P205 ED ROPER	SWNWS12T07SR06W	H	330	7.00	--
P210 LOUIS CUMBUST	NWSES02T07SR06W	H	94.0	4.00	--
P215 CHARLEY MAYS	NESWS09T07SR06W	H	78.0	4.00	--
P216 BECKHAM	NWNES09T07SR06W	H	89.0	--	--
P220 BOARD OF SUPVRS	NESES09T07SR06W	U	365	--	--
P221 BOARD OF SUPVRS	NENES09T07SR06W	-	--	--	--
P226 ECATAWPA	NWNWS13T07SR06W	P	345.	260.00	121GRMF
P227 JACKSON COUNTY	NENES09T07SR06W	U	347	--	122PCGL
P228 JACKSON COUNTY	SESWS12T07SR06W	U	415.	200.00	121GRMF
P249 G R HARDY	SWNES13T07SR06W	H	189	8.00	--
P250 W W WILLIAMS	SENES13T07SR06W	H	189	--	--
P259 ALVIN CHARLTON	NESWS01T07SR06W	H	412	10.00	121GRMF
P260 G S MC KNOWN	NESES02T07SR06W	H	257	9.00	121GRMF
P270 HAROLD MONROE	SWNES02T07SR06W	H	346	--	122PCGL
P271 ABBY GRIFFIN	NWSES12T07SR06W	H	68.0	4.00	121CRNL
P274 GEO MCDONALD	-----S02T07SR06W	H	356	4.00	121GRMF
P275 O G JOHNSTON	NWSWS10T07SR06W	H	215	--	121GRMF
P276 CLYDE OLIVER	NESWS12T07SR06W	H	69.	--	121GRMF

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
P285 A R CREWS	NWSES12T07SR06W	H	68.	--	121CRNL
P286 ROYCE CROWLEY	NESWS13T07SR06W	H	173	--	121GRMF
P290 G C CALVIN	NWSWS13T07SR06W	H	189	6.00	121GRMF
P292 THOMPSON	NWNWS01T07SR06W	I	80.0	10.00	121CRNL
P297 JAS TAYLOR	SWSWS02T07SR06W	H	359	6.00	122PCGL
P300 S W SMITH	NENES11T07SR06W	H	533.	7.00	122PCGL
P305 MYRA WARE	NESES02T07SR06W	H	78.0	7.00	121CRNL
P306 HAYDELL	----S12T07SR06W	H	252	--	121GRMF
P309 N L BOOKER	NWSES12T07SR06W	H	609	--	122MOCN
P310 ANDY WHITEHEAD	NWNES12T07SR06W	H	174	--	121GRMF
P325 JACOB THOMAS	SWNES08T07SR06W	H	65.0	7.00	121CRNL
P330 JACK LOWMAN	NWSES12T07SR06W	H	829	9.00	122PCGL
P331 DOLPHUS GRIFFIN	----S08T07SR06W	H	273	--	121GRMF
P332 ROBERT BAILEY	----S13T07SR06W	H	329	--	121GRMF
P335 G H MARTIN	----S10T07SR06W	H	346	--	121GRMF
P342 ERWIN & CO	SESWS12T08SR06W	I	90.0	15.00	121CRNL
P346 JAMES W HUGHEY	NESES13T07SR06W	H	195	--	121GRMF
P347 L C NEWELL	----S12T07SR06W	H	438	8.00	121GRMF
P356 F R GATTI	----S08T08SR06W	-	804	75.00	122PCGL
P369 OTIS BARNES	NESWS11T07SR07W	H	392	10.00	121GRMF
P375 ESCATAWPA	NENES09T07SR06W	P	350	250.00	121GRMF
P376 ESCATAWPA	SWSES12T07SR06W	P	417	250.00	121GRMF
P389 MOSS POINT MARINE	----S11T07SR06W	U	170.	100.00	121GRMF
P415 BERNICE HAVARD	NWSWS02T07SR06W	I	95.	85.	121CRNL
P416 BERNICE HAVARD	SWNWS02T07SR06W	I	95.	85.	121CRNL
P419 BURNICE HAVARD	SWNWS02T07SR06W	I	100.	85.	121CRNL
P447 HERMAN CROINER	----S01T07SR06W	H	201	9	121GRMF
Q008 JAMES T JONES	NWSES06T07SR05W	H	39.0	--	112TRCS
Q009 RAY J DELMAS	SENWS06T07SR05W	H	258	--	122MOCN
Q010 CLYDE WELLS	SWNWS18T07SR05W	H	189	--	121GRMF
Q016 THIOKOL CHEM	SWSWS17T07SR05W	-	967.	300.00	122PCGL
Q142 W A GREENOUGH	NWSWS18T07SR05W	H	157.	--	121GRMF
Q196 LEE WATKINS	NWNES05T07SR05W	H	199.	--	121GRMF
Q201 J T JONES	NENES06T07SR05W	H	236	--	121GRMF
Q205 BILL HATLEY	NENES06T07SR05W	H	241	--	121GRMF
Q220 GARY SMITH	SWSWS06T07SR05W	H	312	--	--
Q238 R LOCKHART	NENWS05T07SR05W	H	162.	--	121GRMF
Q254 CH OF LORD JESUS	NENES06T07SR05W	H	257.	--	121GRMF
Q276 SAM PRESLEY	NENES05T07SR05W	H	426	--	121GRMF
Q278 JOHN L RAY	NWSES18T07SR05W	H	199	--	121GRMF

LOCAL WELL NUMBER	LAND-NET LOCATION	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	DISCHARGE (GPM)	AQUIFER CODE
Q292 CHU OF LORD JES	NENES06T07SR05W	H	257.	--	121GRMF
Q294 BERT LOLLER	NENWS05T07SR05W	H	176	--	121GRMF
Q295 P P PARKER	NENWS06T07SR05W	H	246	--	122PCGL
Q329 TERRY BRELAND	NENWS05T07SR05W	H	153.	--	121GRMF
Q330 VIRGIL BERNT	NWNWS06T07SR05W	H	152	--	121CRNL
Q339 J H KING	NWNWS05T07SR05W	H	258	--	121GRMF
Q368 MARK DELMAS	NWNWS05T07SR05W	H	269	6.00	121GRMF
Q371 R E RAMSEY	NWNES06T07SR05W	H	153	--	121GRMF
Q380 W A STANLEY	NWNWS06T07SR05W	H	152	--	121GRMF
Q390 R E RAMSEY	NENWS06T07SR05W	H	153	--	121GRMF
Q397 REGENCY WOOD	NENWS05T08SR05W	H	--	--	--
Q434 MOSS POINT	SWNWS18T07SR05W	P	435	300.00	121GRMF
Q439A THIOKOL TEST	--SES06T07SR05W	-	1830.	--	122CTHL
Q439B THIOKOL TEST	--SES06T07SR05W	-	1980.	--	122CTHL
Q457 ESCATAWPA UTIL	SES06T07SR05W	-	--	--	--

LOCAL WELL NUMBER	LAND-NET LOCATION	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)	DISCHARGE (GPM)
L003 P E EHLERS	NWSES12T06SR06W	303205	0883220	H	295	285.00	--	--
L004 H W HUDSON	NWSES12T06SR06W	303206	0883207	H	336	321.00	--	--
L005 J H LACY	NESES11T06SR06W	303209	0883256	H	307	297.00	--	--
L006 R R BULLOCK	NESWS13T06SR06W	303137	883155	H	32.0	27.00	--	--
L007 ED BULLOCK	NESWS13T06SR07W	303135	0883208	H	306	296.00	--	--
L008 ALVIN LOVE	NESES14T06SR06W	303123	0883303	H	956	940.00	--	30.00
L009 LIONELL SMITH	NWSES14T06SR06W	303116	0883308	H	957.	937.00	--	--
L010 H L PORTER	SESES14T06SR06W	303058	883259	H	231	221.00	--	--
L011 H L PORTER	SWSWS14T06SR06W	303058	883259	H	26.0	--	--	--
L012 JOSEPH CHWALNY	NENWS23T06SR06W	303051	883305	H	59.0	--	--	--
L014 PECK WILLIAMS	SESES39T06SR06W	303045	883708	H	103	95.00	--	--
L015 CLAUDE GOFF	SESES39T06SR06W	303045	883708	H	32.0	29.00	--	--
L016 T B BIRDSONG	NESES40T06SR06W	303005	0883702	H	437.	422.00	437.00	--
L017 T B BIRDSONG	NESES40T06SR06W	303005	883659	H	405	395.00	--	--
L018 D W ALLEN	SENES23T06SR06W	303028	883259	H	245	235.00	--	--
L019 JESSIE ALLEN	SWSWS23T06SR06W	303012	0883312	H	385	375.00	--	--
L020 FAIRLEY&BECKMAN	NWSES43T06SR06W	303002	0883319	H	210	200.00	--	--
L021 WOODROW PERRY	NENWS26T06SR06W	302955	883320	H	367	355.00	--	3.00
L022 BILLS FISH CAMP	NWSES23T06SR06W	302952	0883324	H	52.0	--	--	--
L023 BILLS FISH CAMP	NWSES23T06SR06W	302952	883324	H	36.0	--	--	--
L024 HARRY PRASSENOS	NWNES35T06SR06W	302910	883326	H	238	228.00	--	--
L025 EDSEL GUNNER	NWSES35T06SR06W	302900	883342	H	360	350.00	--	--
L026 FRANK WILKERSON	NENWS35T06SR06W	302904	883308	-	47.0	--	--	--
L027 J B MATHEWS	NESES35T06SR06W	302904	883304	H	252	--	--	--
L028 CHARLES LANDER	SWNWS36T06SR06W	302842	0883242	H	660	620.00	--	20.00
L029 GRAHAM FISHCAMP	SESWS35T06SR06W	302824	0883313	H	61.0	55.00	--	--
L030 W A ROGERS	SWNES40T06SR06W	302936	883731	H	67.0	--	--	--
L031 BILLS FISH CAMP	NWSES23T06SR06W	302953	0883323	H	231	--	--	--
L032 ESCATAWPA UTIL DIST	NWNES26T06SR06W	302930	0883315	P	245.	220.00	--	265.00
L033 JACKSON COUNTY	NWNES26T06SR06W	302930	0883316	H	355.	--	--	--
L034 GLENN D YAWN	SENES24T06SR06W	303028	883158	H	357	347.00	--	--
L035 NORMAN SCOTT	NWSWS43T06SR06W	303038	0883335	H	252.	--	--	--
L036 EDNA THORNTON	NWNES23T06SR06W	303056	883307	H	234	224.00	--	--
L037 A O DUMAS	SESES43T06SR06W	302944	883259	H	231	221.00	--	--
L039 DEWEY BROADUS	NWSES26T06SR06W	302929	883317	H	221	211.00	--	2.00
L040 R SASSER	NENWS35T06SR06W	302903	0883322	H	262.	252.00	--	--
L041 MIKE CUNNINGHAM	NWNES35T06SR06W	302906	0883327	H	236.	226.00	--	--
L042 T D FURGERSON	SESWS35T06SR06W	302822	883316	H	651	641.00	--	--
L043 A E MARINO	SWSWS25T06SR06W	302917	883248	H	241	231.00	--	--
L044 A D MORRISON	NWNWS25T06SR06W	303001	883245	H	141	131.00	--	--

Ref 5

AQUIFER CODE	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED
122PCGL	-1.00	06-01-59
122PCGL	-12.00	08-01-58
122PCGL	-12.00	01-01-59
110TRCS	16.00	01-01-58
122PCGL	3.00	09-01-58
122PCGL	-35.00	05-01-59
122PCGL	-9.7	07-07-88
122PCGL	7.00	07-01-58
110TRCS	-8.00	08-01-58
121CRNL	10.00	08-01-58
121GRMF	.00	01-01-57
110TRCS	25.00	05-01-58
121GRMF	-1.00	01-15-56
122PCGL	--	--
121GRMF	5.00	05-01-60
122PCGL	-14.00	11-01-58
122PCGL	--	--
122PCGL	-10.00	02-01-60
110TRCS	--	--
110TRCS	10.00	05-01-60
122PCGL	1.00	10-01-59
122PCGL	-2.00	12-01-59
110TRCS	10.00	02-01-59
122PCGL	5.00	09-01-60
122PCGL	-12.00	08-01-59
110TRCS	--	--
121CRNL	2.00	01-01-52
122PCGL	6.00	01-01-61
121GRMF	54.72	10-27-82
122PCGL	--	--
--	-2.00	08-01-60
121GRMF	6.00	04-01-61
--	6.00	09-01-61
--	6.00	08-01-61
--	7.00	09-01-61
121GRMF	8.00	03-01-62
121GRMF	-4.00	03-01-62
--	-7.00	04-01-62
--	6.00	05-01-62
--	12.00	06-01-62

LOCAL WELL NUMBER	LAND-NET LOCATION	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)	DISCHARGE (GPM)
L045 UNKNOWN	SENWS26T05SR06W	302928	883318	H	370	360.00	--	--
L047 D E WESTBROOK	NENWS26T06SR06W	302936	883315	H	370	360.00	--	--
L048 F D ROBERTSON	SWSWS36T06SR06W	302825	883247	H	157	152.00	--	--
L050 A C FRANKLIN	SENWS35T06SR06W	302841	883307	H	220	215.00	--	--
L051 M F PARKINSON	SWNWS35T06SR06W	302849	883335	H	357	347.00	--	--
L052 A W SHERMAN	NWSES26T06SR06W	302928	883317	H	241	236.00	--	--
L053 BASTON HOMES	NESWS35T06SR06W	302842	883308	H	252	247.00	--	--
L054 T L DELASHMENT	NWNWS35T06SR06W	302904	883338	H	352	347.00	--	--
L055 J D KELLY	NWNWS35T06SR06W	302903	883339	H	357	352.00	--	--
L056 JAMES D CROWE	SWNWS36T06SR06W	302837	883248	H	245	235.00	--	--
L057 DONALD WILSON	SESWS36T06SR06W	302821	883216	H	496	491.00	--	12.00
L058 W T TRIPLETT	NWSES11T06SR06W	303220	883314	H	298	288.00	--	10.00
L059 P J TILURAN	NESES35T06SR06W	302853	883256	H	250	245.00	--	--
L060 H C MILLER	NWNES23T06SR06W	303055	0883302	H	312	307.00	--	--
L061 LOUIS SADNIES	SENWS39T06SR06W	303058	883525	H	215	210.00	--	--
L062 CARROLL WILLIAM	SENWS39T06SR06W	303105	883710	H	312	307.00	--	--
L063 TOM MC MILLIAN	SENWS39T06SR06W	303040	883720	H	89.0	84.00	--	--
L068 CECIL MCGEE	NWSES07T06SR06W	303225	883728	H	644	636.00	--	12.00
L069 R V WALKER	SENES12T06SR06W	303225	883200	H	280	270.00	--	12.00
L070 F L FREDRICK	SESWS25T06SR06W	302915	883218	H	70.0	66.00	--	--
L071 YOUNG	NWSES35T06SR06W	302845	883320	H	60.0	55.00	--	--
L073 H H ROBBINS	NESWS11T06SR06W	303210	883308	H	447	442.00	--	7.00
L074 MARVIN YAWN	SESWS11T06SR06W	303200	883306	H	453	443.00	--	6.00
L075 ROBERT WEBB	----S39T06SR06W	303045	0883430	H	520	504.00	--	--
L077 O H ROBERTS	NESWS24T06SR06W	303027	0883233	H	173.	168.00	--	--
L079 FRED MCNEESE	SWSES12T06SR06W	303154	0883208	H	330	326.00	--	--
L080 JOE BULLOCK	SWNES13T06SR06W	303135	0883220	H	115	110.00	--	--
L081 A G CHAMPINE	SESWS43T06SR06W	303006	883318	H	264	260.00	--	--
L082 GEO MCDONALD	NWNES13T06SR06W	303141	0883214	H	672.	662.00	--	--
L083 J B MAYO	SWNES39T06SR06W	303048	883742	H	110	105.00	--	10.00
L085 BILL MATHEWS	NESES24T06SR06W	303022	0883208	H	240	235.00	--	--
L086 HARRY SELF JR	NWNES25T06SR06W	303004	0883215	H	219	214.00	--	--
L087 J E BAILEY JR	SENES39T06SR06W	303050	883714	H	122	117.00	--	9.00
L088 A NOLF	NWNES35T06SR06W	302906	0883314	H	252	242.00	--	--
L089 JAMES E HOWARD	----S35T06SR06W	302845	883306	H	250	240.00	--	--
L090 R E SMITH	----S35T06SR06W	302845	883306	H	255	245.00	--	--
L093 DAN HYATT	NESES20T06SR06W	303004	883600	H	237	232.00	--	--
L094 RAY GRIERSON	NENES26T06SR06W	302953	883300	H	362	357.00	--	10.00
L095 KEN KNOTTS	NENES26T06SR06W	303000	883252	H	264	259.00	--	10.00
L096 PAT DUGAN	NWSWS35T06SR06W	302856	883345	H	360	355.00	--	--

AQUIFER CODE	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED
122MOCN	-6.00	07-01-62
122MOCN	-4.00	07-01-62
122MOCN	7.00	11-01-62
--	7.00	10-01-63
--	-7.00	10-01-63
--	9.00	11-01-63
121GRMF	5.00	03-01-64
122MOCN	-6.00	01-01-66
122MOCN	-6.00	01-01-66
--	8.00	04-01-66
122MOCN	8.00	08-01-67
122MOCN	-1.00	09-01-67
122MOCN	4.00	09-01-63
121GRMF	-1.00	09-01-63
121GRMF	4.00	07-01-64
121GRMF	10.00	07-01-64
121CRNL	18.00	10-01-64
122PCGL	-6.00	03-01-66
122PCGL	6.00	06-01-68
121CRNL	8.00	12-01-65
121CRNL	4.00	06-01-65
122PCGL	-10.00	03-01-67
122PCGL	5.00	08-01-67
122PCGL	-2.00	11-01-68
121GRMF	11.00	03-01-69
121GRMF	1.00	08-01-68
121GRMF	10.00	10-01-68
122PCGL	18.00	04-01-68
122PCGL	-5.00	01-01-70
121GRMF	12.00	03-01-70
121GRMF	12.00	07-01-70
121GRMF	8.00	07-01-70
121CRNL	17.00	11-01-70
121GRMF	6.00	08-01-62
121GRMF	6.00	08-01-62
121GRMF	6.00	08-01-62
121GRMF	5.00	05-01-71
121GRMF	10.00	03-01-72
121GRMF	10.00	03-01-72
121GRMF	13.00	03-01-72

LOCAL WELL NUMBER	LAND-NET LOCATION	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)	DISCHARGE (GPM)
L097 OWEN WELLS	SWNWS35T06SR06W	302840	883338	H	679	669.00	--	6.00
L098 CECIL FULTON	NENWS13T06SR06W	303138	883206	H	111	106.00	--	10.00
L101 DAVE TOLBY	NESWS13T06SR06W	303140	883205	H	682	672.00	--	10.00
L104 MISS POWER CO	NWSWS11T06SR06W	303212	0883343	-	--	--	--	--
L106 JESSE WHITE	SWSES35T06SR06W	302825	883300	H	355	349.00	--	--
L107 AUSTIN ROBERTS	NESWS24T06SR06W	303025	0883222	H	263	253.00	--	20.00
L108 AUSTIN ROBERTS	NWSES24T06SR06W	303029	0883230	H	258	253.00	--	10.00
L109 MANNING HOMES	NENWS13T06SR06W	303121	883215	H	60.0	55.00	--	12.00
L110 BILLY MATHEWS	NENWS25T06SR06W	302955	883205	H	275	270.00	--	15.00
L111 GENE ALMOND	SWSES12T06SR06W	303158	0883216	H	687.	677.00	--	12.00
L112 HAROLD YOUNG	NENWS35T06SR06W	302904	0883334	H	245	240.00	--	12.00
L113 A ROBERTS	SENWS24T06SR06W	303039	0883221	H	265	255.00	265.00	7.00
L114 MISS POWER CO	NWSWS11T06SR06W	303212	883342	E	313	263.00	313.00	500.00
L116 RED LADNER	SWSES43T06SR06W	303013	883319	U	961	941.00	961.00	45.00
L118 AUSTIN ROBERTS	NENES25T06SR06W	303003	883210	H	321	311.00	321.00	8.00
L119 INTL PAPER	SESES25T06SR06W	302923	0883203	N	242	227.00	242.00	85.00
L120 ROBERT EARL AMNETT	-----S12T06SR06W	303208	883214	H	285	275.00	285.00	10.00
L122 BUDDIE BAILEY	NWSES39T06SR06W	303055	883728	H	443	423.00	443.00	27.00
L124 J D BULLOCK	SWNES13T06SR06W	303137	0883212	H	200.	190.	200.	10.
L126 SEA CHICK	--NWS23T06SR06W	303039	0883301	-	--	390.	410.	--
L127 MISS POWER CO	NESWS11T06SR06W	303208	0883324	N	686	641	686	503
L128 SEA CHICK	S24T06SR06W	303040	0883302	Q	--	--	--	900
L129 SEA CHICK	NWS24T063R06W	303048	0883237	Q	1420.	--	--	1000
L130 SEA CHICK	S24T06SR06W	303038	0883300	Q	--	--	--	1200
L131 SEA CHICK	S24T06SR06W	303039	0883300	Q	--	1330	1410	1500
L133 W B WADE	NENWS40T06SR06W	302953	0883738	H	570	560	570	10
L134 KYLE HOLDEN	NENES40T06SR06W	302957	0883733	H	488	478	488	--
L136 EUGENE ALMOND	SWSES12T06SR06W	303158	0883216	H	325.	315	325	12
L138 AUSTIN ROBERTS	NWSES24T06SR06W	303022	0883219	H	270	260	270	7
L139 JERRY LEE	SWNES39T06SR06W	303058	0883722	H	438	428	438	12
L140 STEWART FREDERICK	NESWS36T06SR06W	302840	0883224	H	126	116	126	10
L141 M E GUESS	SWSES25T06SR06W	302922	0883214	H	247	240	247	8.5
L142 AUSTIN ROBERTS	NESWS24T06SR06W	303024	0883213	H	266	256	266	9
L143 AUSTIN ROBERTS	NESWS24T06SR06W	303029	0883222	H	270	260	270	8
L144 S A McINNIS JR	SESES24T06SR06W	303008	0883200	H	143	133	143	15
L145 FRANK MICHEL	--NES13T06SR06W	303141	0883202	H	106	96	106	5
L146 MS POWER CO	-----S11T06SR06W	303156	0883324	H	85	80	85	--
L147 WILLIE MAC MALONE	NESES11T06SR06W	303214	0883259	H	300	290	300	7
L148 WILLIE MAC MALONE	NESES11T06SR06W	303214	0883254	H	316	306	316	--
M007 JOHN CHRISTIAN	NESWS07T06SR05W	303224	883114	H	13.0	--	--	--

AQUIFER CODE	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED
122MOCN	12.00	03-01-72
121CRNL	10.00	04-01-72
122MOCN	-2.00	12-01-72
--	--	--
121GRMF	15.00	09-01-73
121GRMF	30.00	10-01-73
121GRMF	30.00	08-01-73
121CRNL	14.00	05-01-74
122MOCN	25.00	05-01-74
122PCGL	2.00	12-01-73
121GRMF	30.00	06-01-74
121GRMF	20.00	11-01-74
122PCGL	5.00	04-11-77
122MOCN	--	--
122MOCN	50.00	08-19-80
121GRMF	20.00	06-12-84
121GRMF	20.00	10-05-84
122MOCN	31.00	10-15-82
121GRMF	--	--
122PCGL	--	--
122PCGL	-6.7	10-26-89
122MOCN	--	--
122HBRG	--	--
122MOCN	--	--
122MOCN	--	--
121GRMF	45	07-29-91
121GRMF	42	06-26-91
122PCGL	30.	05-15-91
121GRMF	30	12-09-76
121GRMF	31	04-28-81
121GRMF	24	09-14-83
121GRMF	44	04-24-85
121GRMF	40	03-09-77
121GRMF	35	05-31-77
121GRMF	10	08-02-89
121GRMF	11	05-29-80
121GRMF	13	02-28-77
121GRMF	18	10-20-79
121GRMF	20	02-16-77
110TRCS	5.00	05-01-60

LOCAL WELL NUMBER	LAND-NET LOCATION	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)	DISCHARGE (GPM)
M008 E L WALKER	SENWS07T06SR05W	303226	0883128	H	671	651.00	--	--
M009 J H BULLOCK	SESWS07T06SR05W	303201	0883120	H	684	669.00	--	20.00
M010 E W CRONIER	NWNWS18T06SR05W	303149	883144	H	31.0	--	--	--
M011 H E RAINEY	SESWS08T06SR05W	303154	883019	H	231	221.00	--	--
M012 J W FURBY	NENWS17T06SR05W	303144	883017	H	13.0	--	--	--
M013 H H HOUGH	NWNES17T06SR05W	303140	0883005	H	808	793.00	--	--
M014 MISS FORESTRY	NENES20T06SR05W	303053	882955	H	24.0	--	--	--
M029 ELBERT WHATLEY	NWSWS32T06SR05W	302844	0883036	H	152.	147.00	--	--
M030 CLAIBORNE KOCH	SWSWS31T06SR05W	302826	883146	H	640	630.00	--	--
M031 ROBERT EASLEY	SENWS20T06SR05W	303025	883010	H	388	378.00	--	3.00
M032 LEE WATKINS	SESWS32T06SR05W	302826	883014	H	199	189.00	--	--
M033 DUB PIERCE	SENES32T06SR05W	302850	0883004	H	451.	441.00	--	6.00
M034 J C BROOKS	SWSES34T06SR05W	302918	0883008	H	250	240.00	--	--
M036 GLENN BECKHAM	SWNWS32T06SR05W	302841	883042	H	151	146.00	--	--
M038 R CARPENTER	SENES32T06SR05W	302855	0882956	H	178.	168.00	--	--
M040 CARLTON VICE	SESWS29T06SR05W	302925	883011	H	178	168.00	--	--
M041 J C COX	NENES29T06SR05W	303003	882953	H	40.0	35.00	--	--
M042 A D KINNAN	SWNES29T06SR05W	302950	0883011	H	252.	242.00	--	--
M044 CARL VICE	SWNES32T06SR05W	302853	0883008	H	168	163.00	--	--
M045 ERNEST JACKSON	NESES31T06SR04W	302850	883053	H	69.0	64.00	--	--
M048 W H GARNER	NWSES08T06SR05W	303222	883028	H	756	746.00	--	--
M049 FRANK VICE	SWNWS32T06SR05W	302842	883059	H	152	147.00	--	--
M050 P WILLARD	NWSWS32T06SR05W	302851	883055	H	202	192.00	--	--
M051 LEON BOREN	NENWS32T06SR05W	302909	883014	H	249	244.00	--	--
M054 MORRIS YOUNG	NESES31T06SR04W	302850	883055	H	71.0	66.00	--	--
M057 PAT PATTERSON	SENWS32T06SR05W	302858	0883022	H	147	137.00	--	--
M058 SMITH AND KREBS	NENWS32T06SR05W	302906	0883012	H	266.	256.00	--	--
M063 J P DENNY	NWNWS28T06SR05W	302958	882944	H	262	254.00	--	--
M068 R C TRUSLER	SENWS07T06SR05W	303225	0883120	H	170	165.00	--	--
M069 JOHN CHRISTIAN	SWNES07T06SR05W	303223	0883116	H	220	210.00	--	10.00
M070 FELIX ROBERTS	SESWS30T06SR05W	302923	0883028	H	47.0	42.00	--	10.00
M072 J A MAGEE	NWNES18T06SR05W	303150	0883150	H	155	147.00	--	--
M073 W E WILSON	SWNES29T06SR05W	302946	0883008	H	262.	252.00	--	--
M075 OLLIE VICE JR	NESES32T06SR05W	302834	0882959	H	177	172.00	--	--
M076 MASON & PARKER	SESES29T06SR05W	302910	883040	H	217	--	--	--
M078 E ELKIN	SESWS31T07SR05W	302825	883125	H	230	225.00	--	--
M083 BOWERS L MAY	SENWS29T06SR05W	302928	883020	H	270	265.00	--	10.00
M086 SERENITY GARDEN	NWNWS18T06SR05W	303142	0883148	H	110.	105.00	--	5.00
M087 A E PIERCE	NWSES32T06SR05W	302839	0883012	H	238.	228.00	--	--
M089 DOUGLAS CAMERON	NWSES08T06SR05W	303200	883029	H	66.0	62.00	--	--

AQUIFER CODE	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED
122PCGL	-14.00	08-01-60
122PCGL	-13.00	09-01-59
110TRCS	16.00	04-01-60
122PCGL	11.00	07-01-60
110TRCS	5.00	10-01-58
122PCGL	-17.00	11-01-58
110TRCS	11.00	10-01-58
121GRMF	10.	11-01-63
122MOCN	-9.00	07-01-63
--	-11.00	01-01-61
--	10.00	05-01-61
121GRMF	-9.00	08-01-61
121GRMF	-6.00	08-01-61
--	10.00	09-01-61
121GRMF	6.00	03-01-62
--	9.00	05-01-62
--	10.00	06-01-62
121GRMF	14.00	08-01-62
121GRMF	7.00	03-01-63
--	4.00	03-01-63
--	-18.00	04-01-63
--	11.00	06-01-63
--	8.00	06-01-63
--	58.00	07-01-63
--	10.00	11-01-63
121GRMF	-10.00	03-01-64
121GRMF	8.00	04-01-64
--	1.00	07-01-66
121GRMF	25.00	09-01-66
121GRMF	16.00	01-01-68
121CRNL	4.00	08-01-67
121CRNL	10.00	04-01-68
121GRMF	2.00	04-01-68
121GRMF	10.00	06-01-64
122MOCN	6.00	06-01-64
122MOCN	8.00	10-01-64
122PCGL	8.00	07-01-68
121GRMF	20.00	04-01-65
121GRMF	8.00	12-01-64
121CRNL	15.00	06-01-64

LOCAL WELL NUMBER	LAND-NET LOCATION	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)	DISCHARGE (GPM)
M090 E E DEARING	NWSWS32T06SR05W	302842	0883044	H	204	200.00	--	--
M092 GERALD SHANK	SENES29T06SR05W	302920	883015	H	154	150.00	--	--
M093 D S BARFIELD	SENES29T06SR05W	302919	883015	H	273	268.00	--	--
M100 JIM WRIGHT	NENWS32T06SR05W	302915	883015	H	460	450.00	--	--
M102 R C TRUSLER	NWNWS07T06SR05W	303210	883115	H	170	165.00	--	--
M105 LEROY TRUSSLER	NWSES07T06SR05W	303210	883115	H	65.0	60.00	--	--
M107 JIM RODGERS	SESES31T06SR05W	302832	0883100	H	590.	580.00	--	--
M108 HELENA METH CH	SWNWS28T06SR05W	302942	0882944	H	215	210	215	6
M110 MAX PORTER	NWSWS32T06SR05W	302910	883045	H	45.0	40.00	--	--
M112 WALTER ROBERTS	NESWS30T06SR05W	302931	0883120	H	726.	721.00	--	7.00
M114 JIM ROGERS	SWNES31T06SR05W	302850	883100	H	590	580.00	--	--
M115 TOM THAMES	SWSES29T06SR05W	302918	883024	H	271	266.00	--	8.00
M116 T B MORGAN	NENWS29T06SR05W	302957	883012	H	110	105.00	--	6.00
M118 FRANK EVERETT	SESWS31T06SR05W	302827	883106	H	154	149.00	--	--
M121 J W HUDDLESTON	NESWS29T06SR05W	302945	883012	H	264	260.00	--	--
M124 LENON PIERCE	NENES08T06SR05W	303230	883012	H	286	282.00	--	--
M129 D H HARRISON	NWSWS31T06SR05W	302840	0883138	H	253.	243.00	--	7.00
M134 CHAS W MAYO	SWSES08T06SR05W	303201	0883008	H	216	206.00	--	7.00
M136 HINTON CONST CO	NESWS31T06SR05W	302850	883109	H	45.0	40.00	--	6.00
M140 J L ALEXANDER	SESWS29T06SR05W	302916	0883032	H	278.	273.00	--	--
M141 J L ALEXANDER	SWSES29T06SR05W	302942	883045	H	278	273.00	--	--
M151 DELBERT GREEN	SWSES29T06SR05W	302918	0883011	H	190.	185.00	--	10.00
M153 C E VICE	SWNES32T06SR05W	302852	0883009	H	447.	437.00	--	--
M155 ERNEST CROPP	SWSES29T06SR05W	302915	883029	H	440	435.00	--	10.00
M156 TALMADGE JASPER	SWSES29T06SR05W	302914	883029	H	270	265.00	--	--
M159 CARLEY DEES	SWNES31T06SR05W	302833	883130	H	573	568.00	--	--
M160 WILLIAM KIBBY	SWNWS31T06SR05W	302835	883137	H	142	138.00	--	--
M164 A W MEADOWS	SESWS29T06SR05W	302952	883015	H	120	116.00	--	21.00
M165 KENNETH CLARKE	NESWS07T06SR05W	303204	0883130	H	1163	1153.00	--	--
M166 PASCO REALTY CO	SWNES29T06SR05W	302954	883014	H	269	264.00	--	12.00
M167 D L BARFIELD	SWSWS29T06SR05W	302916	0883041	H	279	274.00	--	--
M168 LARRY YOUNG	----S29T06SR05W	302941	883000	H	154	149.00	--	10.00
M169 JAMES SUMRALL	NWSES29T06SR05W	302940	0883012	H	276	271.00	--	--
M170 MAX MOORMAN	SWNES29T06SR05W	302912	883035	H	237	232.00	--	--
M173 HELENA PRES CHR	SWSES29T06SR05W	302923	0883007	H	262.	252.00	--	9.00
M175 CARL WALL	NWSWS07T06SR05W	303220	0883142	H	185	180.00	--	10.00
M178 LARRY YOUNG	SWSWS29T06SR05W	302915	883044	H	65.0	60.00	--	5.00
M179 LARRY YOUNG	----S29T06SR05W	302930	883030	H	154	149.00	--	10.00
M180 LARRY YOUNG	SWSWS29T06SR05W	302911	883045	H	131	126.00	--	6.00
M181 LARRY YOUNG	SWSWS29T06SR05W	302911	883045	H	154	149.00	--	10.00

AQUIFER CODE	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED
121GRMF	12.00	10-01-65
121GRMF	12.00	12-01-65
122PCGL	6.00	12-01-65
122PCGL	.00	08-01-66
121GRMF	25.00	09-01-66
121CRNL	17.00	11-01-66
122PCGL	7.00	12-01-66
122PCGL	-3	03-21-67
121CRNL	3.00	09-01-67
122PCGL	-4.00	11-01-67
122PCGL	8.00	04-01-69
122PCGL	6.00	02-01-69
121GRMF	2.00	02-01-69
121GRMF	3.00	03-01-69
122PCGL	5.00	07-01-68
122PCGL	5.00	08-01-68
121GRMF	21.00	12-01-69
121GRMF	12.00	05-01-70
121CRNL	5.00	04-01-70
121GRMF	12.00	06-01-70
122PCGL	12.00	07-01-70
121GRMF	15.00	01-01-71
121GRMF	-7.00	11-01-61
121GRMF	4.00	02-01-70
121GRMF	8.00	03-01-71
122PCGL	16.00	06-01-71
121GRMF	15.00	07-01-71
121GRMF	5.00	10-01-71
122HBRG	-21.7	07-07-88
121GRMF	10.00	11-01-71
121GRMF	10.00	11-01-71
121GRMF	12.00	01-01-72
121GRMF	3.	01-01-72
121GRMF	2.00	01-01-72
121GRMF	6.00	02-01-72
121CRNL	--	--
121CRNL	2.00	04-01-72
121CRNL	--	--
121CRNL	8.00	04-01-72
121CRNL	--	--

LOCAL WELL NUMBER	LAND-NET LOCATION	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)	DISCHARGE (GPM)
M182 DENZIL HARRISON	SESWS08T06SR05W	303152	0883023	H	303	298.00	--	--
M183 BILLY R WILKS	SENWS31T06SR05W	302835	883110	H	400	390.00	--	25.00
M186 W A GREEN	SWSES08T06SR05W	303156	0883016	H	670.	655.00	--	60.00
M189 GLYNN DAVIS	SWSWS29T06SR05W	302910	883028	H	149	144.00	--	10.00
M191 CLEO JONES	NWNES07T06SR05W	303230	883130	H	195	--	--	--
M193 J C BROOKS	SENES29T06SR05W	302938	0882950	H	258.	253.00	--	20.00
M194 JOEL SKINNER	SWNES29T06SR05W	302953	0883015	H	250.	240.00	--	10.00
M197 CHAS WILLIAMS	NESES07T06SR05W	303223	883052	H	703	693.00	--	--
M198 JAMES SAXTON	SESWS29T06SR05W	302920	0883024	H	248	243.00	--	10.00
M199 LARRY YOUNG	SWNES08T06SR05W	303200	883031	H	85.0	80.00	--	10.00
M200 ROGER YATES	SWNES07T06SR05W	303206	883115	H	89.0	84.00	--	12.00
M201 JOHN HUDDLESTON	SENES29T06SR05W	302928	882959	H	258	253.00	--	15.00
M203 GLYNN DAVIS	SWSES29T06SR05W	302911	883030	H	149	144.00	--	10.00
M205 CHARLES GERMAN	NESWS30T06SR05W	302915	883120	H	105	100.00	--	--
M208 L W WEAVER	SENWS29T06SR05W	302931	883018	H	270	260.00	--	9.00
M213 JERRY PRICE	----S31T06SR05W	302830	883130	H	153	148.00	--	10.00
M216 R W SHATTLES	----S19T06SR05W	303030	883030	H	315	305.00	--	20.00
M217 ROBERTS HOMES	NWSES29T06SR05W	302930	883035	H	270	260.00	--	30.00
M218 R&S BUILDERS	NWNES32T06SR05W	302910	883035	H	150	140.00	--	30.00
M226 W C SWOPE	SESES30T06SR05W	302918	883053	H	170.	160.00	170.00	--
M230 G Z BULLOCK	SESWS07T06SR05W	303138	0883127	H	70.0	60.00	70.00	10.00
M250 MILTON BULLOCK	NESWS07T06SR05W	303207	0883122	H	572.	--	--	--
M256 DAVID BULLOCK	SESWS07T06SR05W	303159	0883133	H	1178.	1158.	1178.	--
M260 DAVID BULLOCK	SESWS07T06SR05W	303158	0883134	H	30.	27.	30.	--
M266 JACK LOGAN	SWSES31T06SR05W	302823	0883116	H	720.	695	715	10
M268 SHELBY HOLLAND	NESES07T06SR05W	303101	0883214	H	298	288	298	10
M270 JERRY ROBERTS	S18T06SR05W	303149	0883134	H	100	90	100	10
M288 JIMMY SUMRAL	NWSES29T06SR05W	302938	0883009	H	215	205	215	15
M290 CLEVE BAXLEY	SWNES29T06SR05W	302946	0883011	H	199	189	199	--
M293 JACKY BELK	NWNWS33T06SR05W	302902	0882943	H	225	215	225	7
M299 JACKSON CO PORT	SWSES07T06SR05W	303205	0883118	H	298	288	298	18
M300 ROBERT COMANS	NESWS08T06SR05W	303209	0883018	H	215	210	215	12
M302 RUDOLPH BROOKS	NESWS08T06SR05W	303208	0883031	H	220	200	220	10
M309 JAMES DAVIS	NWNES17T06SR05W	303145	0883015	H	220	210	220	8
M316 J C BROOKS	SWSES29T06SR05W	302919	0883007	H	252	242	252	15
M317 WAYNE BRANNON	SWNES29T06SR05W	302949	0883016	H	269	259	269	--
M318 A T CREWS	SWNES29T06SR05W	302942	0883004	H	230	220	230	12
M319 RUFUS JOHNSON	SWNES29T06SR05W	302902	0883006	H	260	250	260	--
M320 MALCOM ROGERS	SESES31T06SR05W	302830	0883100	H	166	156	166	7
M330 RONALD CARPENTER	SWNES32T06SR05W	302904	0882958	H	167.	157.	167.	8.

AQUIFER CODE	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED
121GRMF	11.00	02-01-72
121GRMF	18.00	06-01-72
122HBRG	5.96	10-27-82
121GRMF	14.00	10-01-72
121GRMF	20.00	10-01-72
121GRMF	12.00	11-01-72
121GRMF	24.00	09-01-72
122MOCN	-10.00	09-01-72
121GRMF	10.00	09-01-72
121CRNL	12.00	08-01-72
121CRNL	18.00	12-01-72
121CRNL	8.00	12-01-72
121CRNL	12.00	10-01-72
121CRNL	4.00	02-01-73
121GRMF	15.00	06-01-73
121GRMF	2.00	04-01-73
121GRMF	17.00	10-01-73
121GRMF	21.00	05-01-73
121GRMF	12.00	05-01-71
121CRNL	9.00	01-01-74
121CRNL	27.00	05-11-76
122PCGL	--	--
122HBRG	--	--
111ALVM	--	--
122PCGL	6	05-18-90
121GRMF	20	08-03-92
121GRMF	20	11-08-92
121GRMF	6	04-24-80
121GRMF	13	04-15-83
121GRMF	18	07-11-80
121GRMF	20	06-27-78
121GRMF	10	07-03-77
121GRMF	20	03-19-84
121GRMF	63	09-06-83
121GRMF	12	03-21-90
121GRMF	6	09-20-77
121GRMF	20	11-23-84
121GRMF	58	12-11-84
121GRMF	20	11-01-78
121GRMF	22.	01-08-87

LOCAL WELL NUMBER	LAND-NET LOCATION	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)	DISCHARGE (GPM)
M333 JACKSON CO BEAT 2	SWNES32T06SR05W	302858	0883005	H	167.	157.	167.	8.
M334 CARL VICE	SWNES32T06SR05W	302856	0883015	H	165.	155.	165.	6.
M337 REV COLEMAN	SWNWS33T06SR05W	302852	0882944	H	165.	155.	165.	10.
M346 ROBERT LADNIER	SENES29T06SR05W	302944	0883002	H	265.	255.	265.	8.
M347 EDDIE TRAMMELL	SWNES07T06SR05W	303223	0883108	H	190.	180.	190.	10.
O113 A H MAYERBACH	SENWS12T07SR07W	302645	883735	H	90.0	85.00	--	8.00
P001 J BOUNDS	NWSES01T07SR06W	302814	883235	S	450	--	--	60.00
P003 STEWARD BREADLY	NENES02T07SR06W	302816	883256	H	372	--	--	--
P004 N G PRASSENOS	NENES02T07SR06W	302810	883258	U	60.0	--	--	--
P005 C O MILLER	NENWS01T07SR06W	302815	0883213	H	373.	363.00	--	4.00
P006 GARNER ROBERTS	NESWS02T07SR06W	302742	0883324	H	966	--	--	--
P007 J G ROBERTS	SWNES02T07SR06W	302745	883323	H	90.0	--	--	--
P008 PAUL ROBERTS	NESWS02T07SR06W	302744	0883323	H	693.	673.00	--	--
P009 FRED NOLF	SWSES01T07SR06W	302739	883232	H	59.0	--	--	--
P010 MACKIE ROGERS	NENWS12T07SR06W	302723	0883221	H	616.	--	--	--
P011 NOLAND SMITH	SWNWS12T07SR06W	302714	0883242	H	532	--	--	--
P012 E H CROPP	NWSES12T07SR06W	302718	883224	H	609	--	--	--
P013 CLEO GRAHAM	NENWS12T07SR06W	302714	0883223	H	630	--	--	--
P014 J CUNNINGHAM	SENWS12T07SR06W	302710	0883232	U	328	--	--	--
P015 W O GREENOUGH	NWSES12T07SR06W	302707	883224	H	336	--	--	--
P016 A B EVANS	SWNES12T07SR06W	302701	883236	H	33.0	--	--	--
P017 J E NELSON	SENES11T07SR06W	302655	883303	H	25.0	--	--	--
P018 A H GREENOUGH	SESES11T07SR06W	302642	0883256	H	174.	164.00	--	--
P019 JOHN GILL	SESWS12T07SR06W	302647	0883218	H	343	--	--	--
P020 C J RAY	NENWS09T07SR06W	302633	883247	H	315	--	--	--
P021 E B SHERMAN	NWNES09T07SR06W	302627	0883248	H	1220.	--	--	--
P022 A LOPEZ	NWNES09T07SR06W	302627	883301	H	27.0	--	--	--
P023 E J SIMMONS	NWSWS09T07SR06W	302614	0883312	H	40.0	--	--	--
P024 ALTON L GOFF	SWNES09T07SR06W	302617	0883244	U	186	176.00	186.00	--
P025 W C EHLERS	NENES14T07SR06W	302630	883225	H	304	--	--	--
P026 CLINTON GILL	SWSES12T07SR06W	302629	883220	-	336	--	--	--
P027 HUBBARD BYRD	SENWS12T07SR06W	302631	883203	H	188	--	--	--
P029 ESCATAWPA SCHOL	NESES09T07SR06W	302616	883230	H	921	--	--	50.00
P030 BAILEY ANDERSON	NESES09T07SR06W	302616	883223	H	306	--	--	--
P031 G R HARDY	SWNES13T07SR06W	302604	883230	H	189	--	--	--
P032 GEO MILLENDER	SWSWS13T07SR06W	302604	883215	U	60.0	--	--	--
P033 W W WILLIAMS	SESES13T07SR06W	302558	883203	H	750	--	--	--
P034 GEORGE PLANER	SENWS09T07SR06W	302610	0883247	H	35.0	--	--	--
P041 HOLTZ SEAFOOD C	NWNWS24T07SR06W	302533	0883242	H	206	--	--	--
P146 KARL WIESENBERG	--NWS07T08SR06W	302630	0883250	H	300	270.00	--	--

AQUIFER CODE	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED
121GRMF	40.	03-19-82
121GRMF	32.	09-19-86
121GRMF	20.	05-28-87
121GRMF	10.	10-05-94
121GRMF	30.	09-28-94
121GRMF	11.00	04-01-68
122MOCN	-5.00	05-01-59
122MOCN	-2.00	12-01-59
--	10.00	01-01-59
121GRMF	-12.00	03-01-59
122PCGL	--	01-01-58
112ALVM	5.00	02-01-59
122PCGL	-10.00	08-01-60
112ALVM	7.00	08-01-58
121GRMF	4.00	12-01-59
122PCGL	-6.00	11-01-60
122MOCN	4.00	10-01-59
122PCGL	-2.00	07-01-58
121GRMF	73.00	10-27-82
122MOCN	4.00	08-01-59
112ALVM	6.00	02-01-59
112ALVM	3.00	02-01-59
121CRNL	10.00	05-01-59
121GRMF	4.00	11-01-58
122MOCN	3.00	04-01-60
122PCGL	-41.00	05-01-59
112ALVM	6.00	02-01-59
111ALVM	12.00	02-01-59
121GRMF	14.00	05-28-59
122MOCN	4.00	07-01-58
122MOCN	--	--
122MOCN	8.00	06-01-59
122PCGL	30.00	01-01-30
122MOCN	4.00	04-01-60
122MOCN	10.00	09-01-60
--	--	--
122MOCN	-13.00	09-01-39
111ALVM	4.00	08-01-58
122MOCN	--	--
121GRMF	43.00	01-01-62

LOCAL WELL NUMBER	LAND-NET LOCATION	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)	DISCHARGE (GPM)
P149 ESCATAWPA	SWSES12T07WR06W	302639	0883215	U	1128	--	--	--
P152 TED BAILEY	NWSWS13T07SR06W	302559	0883213	H	198	--	--	--
P153 MR NELSON	SENWS02T07SR06W	302748	883317	H	64.0	--	--	--
P154 H C COOPER	NENWS02T07SR06W	302814	883315	-	89.0	--	--	--
P156 A R COKER	NESES02T07SR06W	302801	883258	H	72.0	--	--	--
P161 ALTON L GOFF	SWNES09T07SR06W	302617	0883244	H	176	--	--	--
P162 C STRINGFELLOW	NENWS09T07SR06W	302634	0883255	H	308	--	--	--
P164 ARDEN CUNNINGHM	NENWS12T07SR06W	302724	0883232	H	386	--	--	--
P169 D W CRAWLEY	NENES02T07SR06W	302816	883254	H	75.0	70.00	--	--
P170 J J ROGERS	SWSWS12T07SR06W	302640	883247	H	345	335.00	--	--
P171 M L CROWLEY	NENES02T07SR06W	302816	883255	H	76.0	71.00	--	--
P172 C T COOLEY	NWSWS01T07SR06W	302750	883249	H	367	357.00	--	--
P173 J P MCGEE	NWNWS12T07SR06W	302719	883250	H	336	326.00	--	--
P174 REV R E PLATT	NENES02T07SR06W	302815	883255	H	546	536.00	--	--
P179 JESSE LENNEP JR	SWNES12T07SR06W	302702	883237	H	336	326.00	--	--
P181 VERNON CROPP	NWNES09T07SR06W	302630	883250	H	304	294.00	304.00	--
P182 R W DURHAM	SWSES01T07SR06W	302749	883230	H	687	672.00	--	--
P184 OTIS BARNES	NESWS11T07SR06W	302701	883311	H	326	316.00	--	--
P185 E N DALE	NWSES11T07SR06W	302654	883311	H	325.	315.00	--	--
P186 C B WILKERSON	----S01T07SR06W	302804	883220	H	253	243.00	--	--
P187 JOHN STUBBS	NENES02T07SR06W	302815	883254	H	63.0	58.00	--	--
P190 JAMES SAVAGE	NWSWS13T07SR06W	302620	883226	H	173	163.00	--	--
P192 JOHN DUPONT	SENES11T07SR06W	302657	883256	H	336	326.00	--	--
P193 LOTTIE ROSS	NESES09T07SR06W	302615	883248	H	356	346.00	--	--
P195 A D MORRISON	NENWS01T07SR06W	302818	883219	H	136	126.00	--	--
P197 SHERRY RICHARDS	SENES02T07SR06W	302744	883257	H	78.0	73.00	--	--
P200 C B BLACKWELL	--NWS01T07SR06W	302816	883245	H	374	368.00	--	--
P201 LOUIS THOMPKINS	NESWS02T07SR06S	302745	883322	H	68.0	63.00	--	--
P202 J W WALTON	NWSWS12T07SR06W	302708	883247	H	396	386.00	--	10.00
P204 A W HEAD	NWNES12T07SR06W	302725	883227	H	357	347.00	--	9.00
P205 ED ROPER	SWNWS12T07SR06W	303205	883230	H	330	325.00	--	7.00
P207 J S HASTINGS	SWNES03T07SR06W	302655	883739	H	308	303.00	--	--
P210 LOUIS CUMBUST	NWSES02T07SR06W	302749	883318	H	94.0	89.00	--	4.00
P215 CHARLEY MAYS	NESWS09T07SR06W	302615	883249	H	78.0	73.00	--	4.00
P216 BECKHAM	NWNES09T07SR06W	302631	883251	H	89.0	84.00	--	--
P220 BOARD OF SUPVRS	NESES09T07SR06W	302619	883226	U	365	--	--	--
P221 BOARD OF SUPVRS	NENES09T07SR06W	302634	0883233	-	--	--	--	--
P226 ECATAWPA	NWNWS13T07SR06W	302627	883224	P	345.	323.00	--	260.00
P227 JACKSON COUNTY	NENES09T07SR06W	302630	0883229	U	347	325.00	--	--
P228 JACKSON COUNTY	SESWS12T07SR06W	302645	883228	U	415.	357.00	--	200.00

AQUIFER CODE	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED
122PCGL	--	--
121GRMF	15.00	08-01-58
112TRCS	--	--
112TRCS	--	--
112ALVM	--	--
121GRMF	10.00	05-01-59
121GRMF	--	--
121GRMF	.00	09-01-59
--	6.00	04-01-61
--	6.00	04-01-61
--	--	--
--	-1.00	04-01-61
--	2.00	04-01-61
--	-6.00	04-01-61
--	4.00	07-01-61
121GRMF	8.00	09-14-61
--	-7.00	09-01-61
--	4.00	10-01-61
121GRMF	4.00	10-01-61
--	3.00	11-01-61
--	13.00	01-01-62
--	12.00	03-01-62
--	4.00	04-01-62
--	8.00	04-01-62
--	10.00	06-01-62
--	14.00	08-01-62
--	2.00	11-01-62
--	11.00	02-01-63
--	2.00	03-01-63
--	-2.00	05-01-63
--	9.00	06-01-63
--	-1.00	07-01-63
--	2.00	08-01-63
--	11.00	12-01-63
--	10.00	12-01-63
--	--	--
--	--	--
121GRMF	16.00	10-01-65
122PCGL	18.00	10-01-65
121GRMF	20.00	09-01-64

LOCAL WELL NUMBER	LAND-NET LOCATION	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)	DISCHARGE (GPM)
P249 G R HARDY	SWNES13T07SR06W	302609	883212	H	189	184.00	--	8.00
P250 W W WILLIAMS	SENES13T07SR06W	302614	883205	H	189	--	--	--
P254 L A CURTIS	NENWS21T07SR06W	302545	883520	H	199	189.00	--	14.00
P259 ALVIN CHARLTON	NESWS01T07SR06W	302743	0883229	H	412	404.00	--	10.00
P260 G S MC KNOWN	NESES02T07SR06W	302800	883315	H	257	249.00	--	9.00
P270 HAROLD MONROE	SWNES02T07SR06W	302748	883318	H	346	341.00	--	--
P271 ABBY GRIFFIN	NWSES12T07SR06W	302715	883231	H	68.0	63.00	--	4.00
P274 GEO MCDONALD	----S02T07SR06W	302748	883318	H	356	252.00	--	4.00
P275 O G JOHNSTON	NWSWS10T07SR06W	302710	883446	H	215	210.00	--	--
P276 CLYDE OLIVER	NESWS12T07SR06W	302650	0883234	H	69.	64.00	--	--
P285 A R CREWS	NWSES12T07SR06W	302657	0883220	H	68.	63.00	--	--
P286 ROYCE CROWLEY	NESWS13T07SR06W	302618	883227	H	173	168.00	--	--
P290 G C CALVIN	NWSWS13T07SR06W	302628	883220	H	189	184.00	--	6.00
P292 THOMPSON	NWNWS01T07SR06W	302803	0883229	I	80.0	75.00	--	10.00
P297 JAS TAYLOR	SWSWS02T07SR06W	302730	883450	H	359	354.00	--	6.00
P300 S W SMITH	NENES11T07SR06W	302712	0883254	H	533.	528.00	--	7.00
P305 MYRA WARE	NESES02T07SR06W	302805	883303	H	78.0	74.00	--	7.00
P306 HAYDELL	----S12T07SR06W	302648	883210	H	252	242.00	--	--
P309 N L BOOKER	NWSES12T07SR06W	302712	883218	H	609	589.00	--	--
P310 ANDY WHITEHEAD	NWNES12T07SR06W	302724	883303	H	174	169.00	--	--
P325 JACOB THOMAS	SWNES08T07SR06W	302727	883633	H	65.0	60.00	--	7.00
P330 JACK LOWMAN	NWSES12T07SR06W	302717	883230	H	829	819.00	--	9.00
P331 DOLPHUS GRIFFIN	----S08T07SR06W	302700	883612	H	273	263.00	--	--
P332 ROBERT BAILEY	----S13T07SR06W	302600	883300	H	329	319.00	--	--
P335 G H MARTIN	----S10T07SR06W	302659	883416	H	346	336.00	--	--
P337 T J WILTZ	----S07T07SR06W	302701	883719	H	381	371.00	--	--
P342 ERWIN & CO	SESWS12T08SR06W	302651	883219	I	90.0	80.00	--	15.00
P346 JAMES W HUGHEY	NESES13T07SR06W	302615	883240	H	195	190.00	--	--
P347 L C NEWELL	----S12T07SR06W	302647	883200	H	438	428.00	--	8.00
P356 F R GATTI	----S08T08SR06W	302800	883255	-	804	784.00	--	75.00
P369 OTIS BARNES	NESWS11T07SR07W	302703	0883317	H	392	382.00	--	10.00
P375 ESCATAWPA	NENES09T07SR06W	302627	0883232	P	350	325.00	350.00	250.00
P376 ESCATAWPA	SWSES12T07SR06W	302645	0883215	P	417	367.00	417.00	250.00
P389 MOSS POINT MARINE	----S11T07SR06W	302724	0883312	U	170.	160.00	170.00	100.00
P398 FRANK HAMILTON	----S04T07SR06W	302616	883724	H	260	250.00	260.00	10.00
P400 FRANK HAMILTON	----S04T07SR06W	302616	883728	H	260	250.00	260.00	10.00
P401 FRANK HAMILTON	----S04T07SR06W	302616	883728	H	260	250.00	260.00	10.00
P402 FRANK HAMILTON	----S04T07SR06W	302616	883728	H	260	250.00	260.00	10.00
P403 FRANK HAMILTON	----S04T07SR06W	302616	883728	H	260	250.00	260.00	10.00
P404 FRANK HAMILTON	----S04T07SR06W	302616	883728	H	260	250.00	260.00	10.00

AQUIFER CODE	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED
--	10.00	09-01-60
--	10.00	09-01-60
121GRMF	10.00	04-01-68
121GRMF	5.00	08-01-64
121GRMF	5.00	09-01-64
122PCGL	-2.00	10-01-64
121CRNL	12.00	07-01-65
121GRMF	-4.00	06-01-65
121GRMF	19.00	05-01-65
121GRMF	10.00	08-01-65
121CRNL	10.00	06-01-64
121GRMF	13.00	07-01-64
121GRMF	12.00	04-01-63
121CRNL	22.00	07-01-64
122PCGL	1.00	01-01-67
122PCGL	-8.00	04-01-67
121CRNL	11.00	09-01-67
121GRMF	6.00	01-01-61
122MOCN	-4.00	10-01-69
121GRMF	14.00	10-01-69
121CRNL	19.00	01-01-70
122PCGL	21.00	01-01-71
121GRMF	25.00	03-01-61
121GRMF	6.00	11-01-61
121GRMF	7.00	09-01-62
121GRMF	33.00	03-01-64
121CRNL	20.00	03-01-71
121GRMF	--	--
121GRMF	38.00	10-01-71
122PCGL	-25.00	03-01-50
121GRMF	48.00	05-01-74
121GRMF	59.00	10-27-82
121GRMF	131.00	10-27-82
121GRMF	15.00	11-10-80
121GRMF	30.00	08-01-84
121GRMF	30.00	08-07-84
121GRMF	30.00	08-10-84
121GRMF	30.00	08-14-84
121GRMF	30.00	08-17-84
121GRMF	30.00	08-21-84

LOCAL WELL NUMBER	LAND-NET LOCATION	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)	DISCHARGE (GPM)
P405 FRANK HAMILTON	----S04T07SR06W	302616	883728	H	260	250.00	260.00	10.00
P406 FRANK HAMILTON	----S04T07SR06W	302616	883728	H	260	250.00	260.00	10.00
P407 FRANK HAMILTON	----S04T07SR06W	302616	883728	H	260	250.00	260.00	10.00
P408 FRANK HAMILTON	----S04T07SR06W	302616	883728	H	260	250.00	260.00	10.00
P415 BERNICE HAVARD	NWSWS02T07SR06W	302742	0883325	I	95.	75.	95.	85.
P416 BERNICE HAVARD	SWNWS02T07SR06W	302740	0883310	I	95.	75.	95.	85.
P419 BURNICE HAVARD	SWNWS02T07SR06W	302806	0883327	I	100.	80.	100.	85.
P431 WONDERLAND CO	NENWS07T07SR06W	302540	0883736	R	117	97	117	100
P432 WONDERLAND CO	----S07T07SR06W	302539	0883738	R	114	94	114	100
P433 WONDERLAND CP	NWNES07T07SR06W	302533	0883717	R	265	245	265	--
P434 WONDERLAND CO	NWNES07T07SR06W	302532	0883723	R	270	0	270	--
P435	NENWS07T07SR06W	302534	0883728	R	245	225	245	--
P447 HERMAN CROINER	----S01T07SR06W	302737	0883203	H	201	191	201	9
P451 WONDERLAND	NENWS07T07SR06W	302533	0883720	I	105.	85.	105.	70.
Q006 JACKSON COUNTY	NWNWS16T07SR05W	302633	0882944	U	318.	--	--	--
Q008 JAMES T JONES	NWSES06T07SR05W	302759	883124	H	39.0	36.00	--	--
Q009 RAY J DELMAS	SENWS06T07SR05W	302752	883100	H	258	--	--	--
Q010 CLYDE WELLS	SWNWS18T07SR05W	302602	883146	H	189	179.00	--	--
Q011 DAVID WALKER	SWNWS18T07SR05W	302553	883145	H	1331	1289.00	--	--
Q012 MONROE HOLLAND	SWSWS18T07SR05W	302550	883139	U	65.0	--	--	--
Q014 THIOKOL CHEM	NENES19T07SR05W	302535	0883056	Z	178.	138.00	--	200.00
Q015 THIOKOL CHEM	NENES19T07SR05W	302535	0883056	U	250	--	--	--
Q016 THIOKOL CHEM	SWSWS17T07SR05W	302623	0883111	-	967.	907.00	--	300.00
Q017 THIOKOL CHEM CORP	NENES19T07SR05W	302535	883056	U	182	142.00	--	400.00
Q018 THIOKOL CHEM CORP	NENES19T07SR05W	302535	0883056	N	250	210.00	--	400.00
Q021 STDRD PRODUCTS	NWNWS20T07SR05W	302540	883040	U	1001	981.00	1001.00	--
Q022 STNRD PRODUCTS	NESES19T07SR05W	302540	883040	U	178	--	--	--
Q023 STNRD PRODUCTS	NWNWS20T07SR05W	302540	883040	U	183	153.00	--	--
Q024 STNDR PRODUCTS	NWNWS20T07SR05W	302540	883040	U	247	--	--	--
Q025 SMITH FISHERIES	NENWS20T07SR05W	302535	0883035	U	200	--	--	--
Q026 SMITH FISHIERS	NWNWS20T07SR05W	302535	0883035	U	130	--	--	--
Q027 SMITH FISHIERES	NENWS20T07SR05W	302535	0883035	N	231	181.00	--	600.00
Q139 J E CLARK	SESWS18T07SR05W	302549	0883132	-	358.	--	--	--
Q142 W A GREENOUGH	NWSWS18T07SR05W	302604	0883150	H	157.	--	--	--
Q151 ZAPATA	NWNWS20T07SR05W	302531	0883039	N	232	182.00	--	500.00
Q158 THIOKOL CHEM CO	NENES19T07SR05W	302533	0883055	N	240	200.00	--	320.00
Q159 THIOKOL CORP	SWSWS17T07SR05W	302542	0883048	N	231	191.00	--	400.00
Q160 THIOKOL CORP	--SWS17T07SR05W	302530	0883059	N	236	186.00	--	500.00
Q161 THIOKOL CORP	NENWS19T07SR05W	302538	883106	-	710	--	--	--
Q162 THIOKOL CORP	SWSWS17T07SR05W	302549	883044	U	296	--	--	--

AQUIFER CODE	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED
121GRMF	30.00	08-24-84
121GRMF	30.00	08-29-84
121GRMF	30.00	09-01-84
121GRMF	30.00	09-05-84
121CRNL	12.	12-03-85
121CRNL	12.	12-03-85
121CRNL	15.	07-28-86
121CRNL	27	01-11-89
121CRNL	20	08-08-89
121CRNL	--	--
121GRMF	26	08-16-89
121GRMF	26	08-18-89
121GRMF	75	10-26-84
121GRMF	25.	04-20-95
122MOCN	--	--
112TRCS	4.00	08-01-58
122MOCN	2.00	08-01-59
121GRMF	12.00	10-01-59
122MOCN	--	--
112TRCS	5.00	06-01-59
121GRMF	15.00	09-01-59
121GRMF	--	--
122PCGL	-1.27	10-28-82
121GRMF	6.00	03-01-52
121GRMF	17.00	12-01-59
122PCGL	-4.00	01-01-59
121CRNL	11.00	10-01-51
121CRNL	11.00	02-01-57
121GRMF	7.00	04-01-58
121GRMF	43.00	10-28-82
121GRMF	--	--
121GRMF	14.00	01-01-56
121GRMF	--	--
121GRMF	9.00	07-01-59
121GRMF	30.00	02-01-65
121GRMF	45.00	10-28-82
121GRMF	32.00	09-01-64
121GRMF	33.00	08-01-65
121GRMF	--	--
121GRMF	--	--

LOCAL WELL NUMBER	LAND-NET LOCATION	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	PRIMARY USE OF WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)	DISCHARGE (GPM)
Q163 THIOKOL CORP	SWSWS17T07SR05W	302549	883044	U	310	--	--	--
Q196 LEE WATKINS	NWNES05T07SR05W	302811	0883008	H	199.	189.00	--	--
Q201 J T JONES	NENES06T07SR05W	302814	0883103	H	236	226.00	--	--
Q205 BILL HATLEY	NENES06T07SR05W	302808	0883102	H	241	231.00	--	--
Q220 GARY SMITH	SWSWS06T07SR05W	302733	883145	H	312	302.00	--	--
Q238 R LOCKHART	NENWS05T07SR05W	302811	0883031	H	162.	157.00	--	--
Q243 GORDON	SWNWS18T07SR05W	302559	883143	H	147	142.00	--	--
Q254 CH OF LORD JESUS	NENES06T07SR05W	302818	0883105	H	257.	252.	257.	--
Q276 SAM PRESLEY	NENES05T07SR05W	302815	882959	H	426	421.00	--	--
Q278 JOHN L RAY	NWSES18T07SR05W	302615	883133	H	199	194.00	--	--
Q286 BEL-AIR ESTATES	NESES17T08SR05W	302620	882957	H	127	122.00	--	--
Q292 CHU OF LORD JES	NENES06T07SR05W	302818	0883103	H	257.	252.00	--	--
Q294 BERT LOLLER	NENWS05T07SR05W	302818	883001	H	176	171.00	--	--
Q295 P P PARKER	NENWS06T07SR05W	302815	883005	H	246	241.00	--	--
Q329 TERRY BRELAND	NENWS05T07SR05W	302816	0883020	H	153.	148.00	--	--
Q330 VIRGIL BERNT	NWNWS06T07SR05W	302800	883145	H	152	147.00	--	--
Q339 J H KING	NWNWS05T07SR05W	302800	883012	H	258	253.00	--	--
Q368 MARK DELMAS	NWNWS05T07SR05W	302807	0883038	H	269	264.00	--	6.00
Q371 R E RAMSEY	NWNES06T07SR05W	302815	883130	H	153	148.00	--	--
Q380 W A STANLEY	NWNWS06T07SR05W	302800	883143	H	152	147.00	--	--
Q390 R E RAMSEY	NENWS06T07SR05W	302812	883112	H	153	148.00	--	--
Q397 REGENCY WOOD	NENWS05T08SR05W	302810	883010	H	--	--	--	--
Q432 MOSS POINT	NENWS19T07SR05W	302539	0883129	-	--	--	--	--
Q433 MOSS POINT TH-1	SWSWS18T07SR05W	302549	0883138	-	--	--	--	--
Q434 MOSS POINT	SWNWS18T07SR05W	302622	0883134	P	435	400.00	435.00	300.00
Q435 MOSS POINT	SWSWS18T07SR05W	302550	0883144	-	513	--	--	--
Q439A THIOKOL TEST	--SES06T07SR05W	302734	0883106	-	1830.	--	--	--
Q439B THIOKOL TEST	--SES06T07SR05W	302734	0883106	-	1980.	--	--	--
Q450 MR HAGEN	----S18T07SR05W	302550	0883138	I	65.	30.	65.	12.
Q457 ESCATAWPA UTIL	SES06T07SR05W	302740	0883145	-	--	--	--	--
Q492 THIOKOL INC	SESES18T07SR05W	302548	0883059	H	222	212	222	65

AQUIFER CODE	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED
121GRMF	--	--
121GRMF	6.00	05-01-62
121GRMF	5.00	06-01-62
121GRMF	7.00	08-01-62
--	20.00	03-01-63
121GRMF	11.00	11-01-63
--	12.00	04-01-64
121GRMF	-9.	03-22-66
121GRMF	-22.00	10-01-64
121GRMF	3.00	12-01-64
121CRNL	17.00	08-01-63
121GRMF	9.00	03-01-69
121GRMF	4.00	05-01-66
122PCGL	7.00	06-01-66
121GRMF	16.00	06-01-70
121CRNL	7.00	09-01-70
121GRMF	17.00	04-01-70
121GRMF	10.00	05-01-72
121GRMF	11.00	10-01-72
121GRMF	15.00	01-01-73
121GRMF	6.00	10-01-72
--	--	--
--	--	--
--	--	--
121GRMF	49.00	10-01-84
122PCGL	--	--
122CTHL	--	--
122CTHL	--	--
111ALVM	20.	07-03-88
--	--	--
121GRMF	35	01-28-88

Data Sheet Report Summary
Mississippi State Department of Health
Division of Water Supply

PWS ID	Name of System	Wells	Connections	Consecutive
	Holmes County (Cont.)			
0260025	NORTH GOODMAN WATER ASSN	0	48	Y
0260027	WEST HOLMES WATER ASSOCIATION	1	195	N
0260030	GAGES SPRINGS WATER ASSN	0	56	Y
0260032	LEBANON W/A-EAST	1	198	N
** County Code: 27	Humphreys County			
0270001	CITY OF BELZONI	3	2210	N
0270002	HUMPHREY CO. W/A-(C&M)	1	71	N
0270003	TOWN OF ISOLA	2	287	N
0270004	TOWN OF LOUISE	2	281	N
0270007	TOWN OF SILVER CITY	2	125	N
0270018	HUMPHREYS CO. W/A-#1	1	292	N
0270019	HUMPHREYS CO. W/A #3 (ISOLA)	0	46	Y
0270020	HUMPHREYS CO. W/A #3 (ISOLA)	1	94	N
0270021	HUMPHEYS CO. W/A #4 (BELZONI)	0	23	Y
0270022	HUMPHREYS CO # 6 GOODEN LAKE	1	63	N
** County Code: 28	Issaquena County			
0280001	TOWN OF MAYERSVILLE	1	130	N
0280009	GRACE WATER ASSOCIATION	1	190	N
0280017	TALLULA UTILITY DISTRICT	1	121	N
** County Code: 29	Itawamba County			
0290002	DORSEY WATER ASSOCIATION	2	650	N
0290003	CITY OF FULTON	6	2590	N
0290004	HOUSTON WATER ASSOCIATION	1	275	N
0290005	TOWN OF MANTACHIE	2	602	N
0290009	TOMBIGBEE WATER ASSOCIATION	2	425	N
0290010	TOWN OF TREMONT	2	258	N
0290016	NE ITAWAMBA W/A #1-RIDGE	2	571	N
0290017	NE ITAWAMBA W/A #2-SALEM	2	581	N
** County Code: 30	Jackson County			
0300002	ESCATAWPA SUBURBAN UTL DIST	4	2210	N
0300004	GAUTIER UTL DIST	9	3450	N
0300005	CITY OF OCEAN SPRINGS	7	4708	N
0300006	CITY OF PASCAGOULA	10	8500	N
0300007	SWEETBRIAR-TWIN BAYOU S/D	1	233	N
0300008	CITY OF MOSS POINT	6	6029	N
0300018	RANDY'S MOBILE HOME PARK	1	36	N
0300021	SPANISH TRAIL APARTMENTS	2	98	N
0300026	HELENA PARK WATER SYSTEM	2	32	N
0300028	PINE GROVE COMM WATER SYSTEM	1	30	N
0300032	SEVENTH STREET SUBDIVISION	2	35	N
0300033	ST ANDREWS WATER & SEWER, INC	2	275	N
0300037	COAST WATERWORKS INC	3	852	N
0300039	EL BAYOU VISTA SUBDIVISION	2	15	N
0300040	MAGNOLIA UTILITIES	2	364	N
0300041	COAST WATER WORKS-NOBLE ACRES	1	37	N

Reference 6

Data Sheet Report Summary
Mississippi State Department of Health
Division of Water Supply

PWS ID	Name of System	Wells	Connections	Consecutive
	Jackson County (Cont.)			
0300042	COAST WATER WORKS-LAURA ACRES	1	49	N
0300043	COAST WATER WORKS-OCEAN VIEW	1	62	N
0300044	GULF PARK WATER	2	933	N
0300045	TUCKER HILL WATER WORKS INC	1	42	N
0300046	MARTIN PINE HILL EST W\WKS	1	34	N
0300047	MAGNOLIA OAKS CONDIMINIUMS	1	109	N
0300050	MOCKINGBIRD TRAILER PARK	2	26	N
0300052	SEASHORE UTL INC-LANGLEY PT	1	55	N
0300057	COAST WATER WORKS-GULF HILLS	5	420	N
0300059	LEMONYE GROVE MOBILE HOME PARK	1	41	N
0300061	TIP MOBILE HOME PARK	1	50	N
0300064	COLONIAL ESTATES # 3 WTR SYST	2	61	N
0300067	WONDERLAND TRAILER PARK	1	33	N
0300068	WOODLAND PARK	1	95	N
0300069	COAST WATER WORKS INC	4	1046	N
0300070	E G TAYLOR WATER SYSTEM	2	45	N
0300075	SIMMONS MOBILE HOME PARK	1	52	N
0300079	BLUFF CREEK MOBILE HOME PARK	2	50	N
0300080	GULF BREEZE MOBILE HOME PARK	1	34	N
0300087	J & J WATER CO #1-TUCKER PARK	1	87	N
0300091	BEACH BAYOU WATER CO	1	53	N
0300104	BAYOU TRAILER PARK	1	10	N
0300110	ROUSE'S WATER COMPANY	1	69	N
0300113	OCEAN BEACH UTILITY	1	90	N
0300143	WESTWICK UTILITY PORTEAUX BAY	1	39	N
0300145	FORT BAYOU MOBILE HOME RENTALS	1	17	N
** County Code: 31	Jasper County			
0310001	TALLAHALA WATER ASSN-ANTIOCH	2	676	N
0310002	TOWN OF BAY SPRINGS	2	747	N
0310003	BEAVERDAM W/A-NORTH	2	462	N
0310004	BEAVER MEADOW WATER ASSN.	3	475	N
0310005	TOWN OF HEIDELBURG	2	440	N
0310007	LOUIN WATER WORKS	1	216	N
0310008	MONTROSE WATER ASSOCIATION	3	134	N
0310009	PAULDING WATER WORKS ASSN	2	311	N
0310010	PHILADELPHIA WATER ASSN	2	598	N
0310011	ROSE HILL WATER ASSOCIATION	2	408	N
0310012	STRINGER WATER WORKS	3	946	N
0310013	TALLAHALA WATER ASSN-MOSSVILLE	1	226	N
0310014	TRI-COUNTY W/A #1-JASPER	2	487	N
0310015	WEST JASPER WATER ASSOCIATION	0	231	Y
0310016	TALLAHALA WTR ASSN-GARLANDVILL	1	430	N
0310017	TALLAHALA WTR ASSN-MISSIONARY	1	25	N
0310018	TALLAHALA WATER ASSN-MONTROSE	1	92	N
0310019	TALLAHALA W/A-TED CLEAR	1	223	N
0310020	TRI-COUNTY W/A #2-SMITH	2	290	N
0310021	VOSSBURG WATER SYSTEM	1	73	N
0310024	TRI-COUNTY # 3 SUMMERLAND	2	219	N

Reference 6

Household, Family

[For definitions of terms and meanings of symbols, see text]

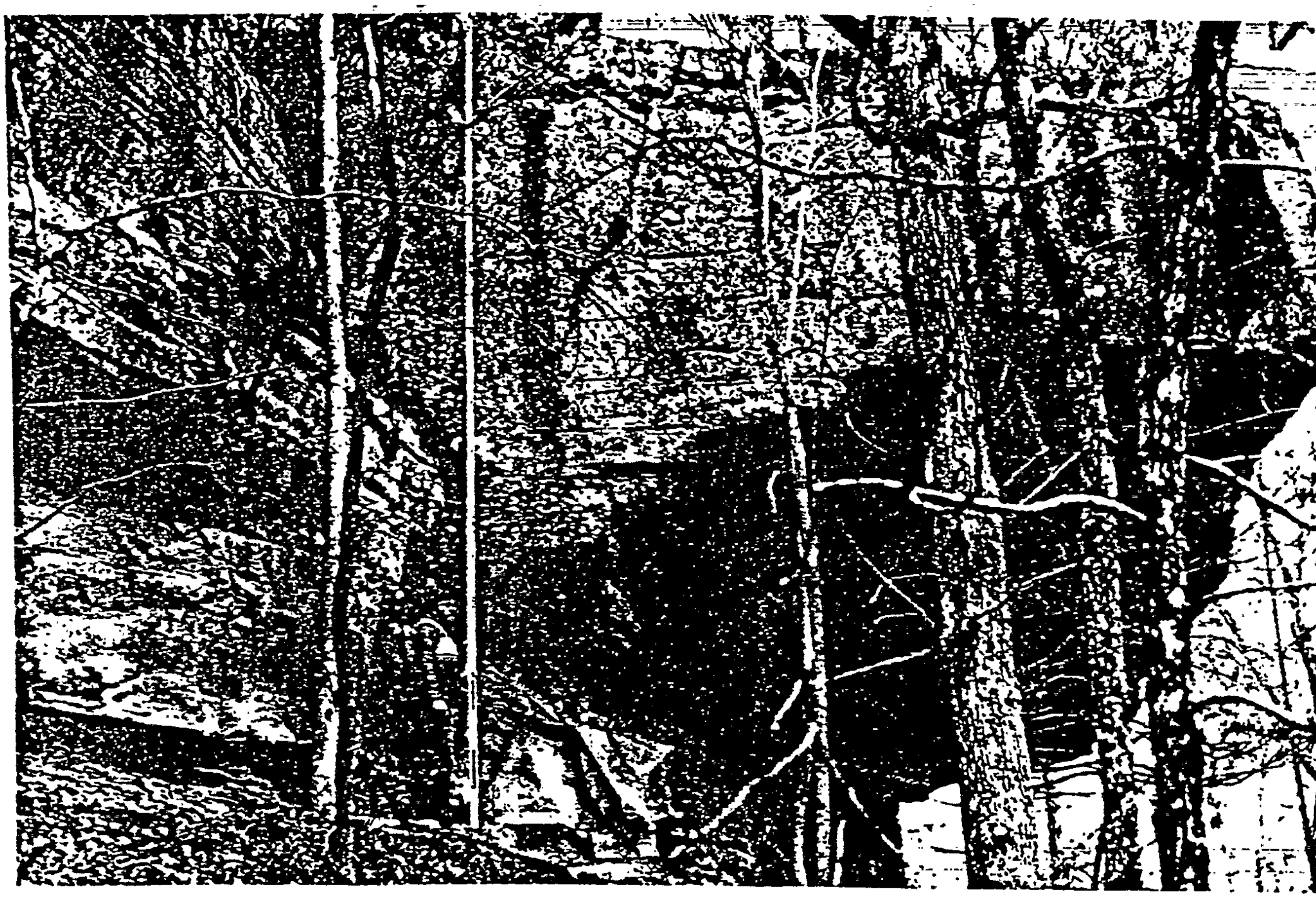
State County Place and [In Selected States] County Subdivision	Persons per— Household	Persons per— Family
The State	2.75	3.27
COUNTY		
Adams County	2.64	3.18
Alcorn County	2.52	3.02
Amite County	2.78	3.30
Attala County	2.63	3.20
Benton County	2.82	3.32
Bolivar County	3.02	3.64
Calhoun County	2.60	3.10
Carroll County	2.75	3.24
Chickasaw County	2.77	3.28
Choctaw County	2.76	3.26
Claiborne County	2.82	3.46
Clarke County	2.71	3.20
Clay County	2.83	3.37
Coahoma County	2.93	3.60
Copiah County	2.83	3.36
Covington County	2.84	3.36
DeSoto County	2.81	3.23
Forrest County	2.54	3.15
Franklin County	2.69	3.22
George County	2.86	3.28
Greene County	2.90	3.35
Grenada County	2.75	3.28
Hancock County	2.64	3.11
Harrison County	2.65	3.17
Hinds County	2.70	3.29
Holmes County	2.97	3.61
Humphreys County	3.07	3.67
Issaquena County	3.02	3.57
Itawamba County	2.59	3.02
Jackson County	2.82	3.25
Jasper County	2.86	3.34
Jefferson County	3.07	3.67
Jefferson Davis County	2.91	3.43
Jones County	2.69	3.17
Kemper County	2.77	3.37
Lafayette County	2.47	3.08
Lamar County	2.78	3.21
Lauderdale County	2.58	3.15
Lawrence County	2.74	3.28
Leake County	2.69	3.22
Lee County	2.65	3.14
Leflore County	2.82	3.47
Lincoln County	2.69	3.20
Lowndes County	2.71	3.23
Madison County	2.74	3.34
Marion County	2.75	3.27
Marshall County	2.93	3.41
Monroe County	2.72	3.22
Montgomery County	2.70	3.25
Neshoba County	2.77	3.22
Newton County	2.68	3.15
Noxubee County	3.04	3.65
Oktibbeha County	2.58	3.18
Panola County	2.91	3.44
Pearl River County	2.77	3.21
Perry County	2.84	3.32
Pike County	2.70	3.27
Pontotoc County	2.65	3.11
Prentiss County	2.63	3.08
Quitman County	2.95	3.58
Rankin County	2.82	3.21
Scott County	2.82	3.31
Sharkey County	3.36	3.92
Simpson County	2.78	3.28
Smith County	2.78	3.25
Stone County	2.76	3.25
Sunflower County	3.06	3.71
Tallahatchie County	3.01	3.60
Tate County	2.92	3.36
Tippah County	2.68	3.14
Tishomingo County	2.48	2.93
Tunica County	3.22	3.84
Union County	2.62	3.08
Walthall County	2.88	3.38
Warren County	2.72	3.28
Washington County	2.98	3.54
Wayne County	2.83	3.31
Webster County	2.63	3.17
Wilkinson County	2.85	3.38
Winston County	2.73	3.27
Yalobusha County	2.59	3.20
Yazoo County	2.86	3.45

U.S. Department of Commerce, Proof Copy of table generated for 1990, CPH-1: Summary population and housing characteristics, issued by Bureau of Census (April 1[illegible]

REFERENCE 7

TISHOMINGO COUNTY GEOLOGY AND MINERAL RESOURCES

Robert K. Merrill
Delbert E. Gann
Stephen P. Jennings



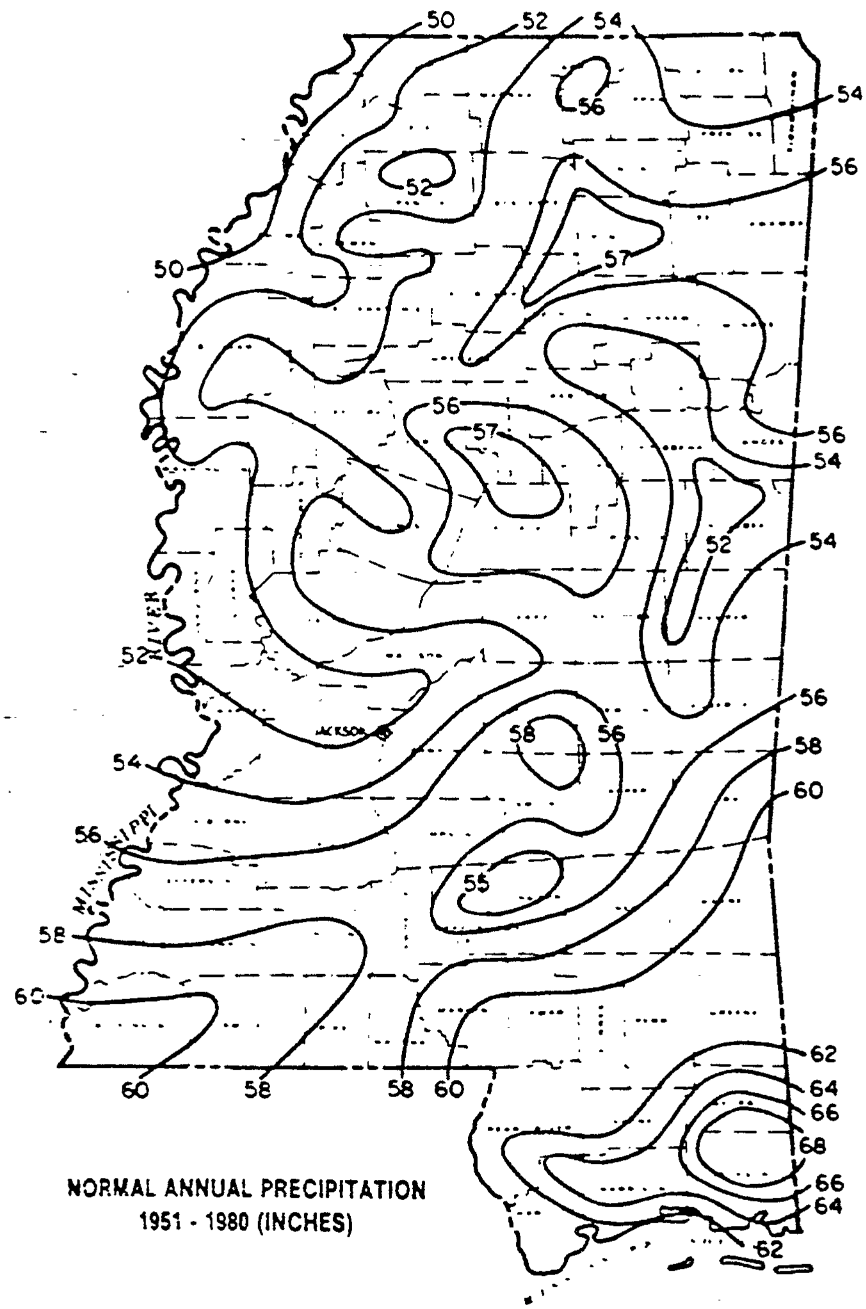
BULLETIN 127

MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES
BUREAU OF GEOLOGY

CONRAD A. GAZZIER
Bureau Director

Jackson, Mississippi
1988

REFERENCE 8



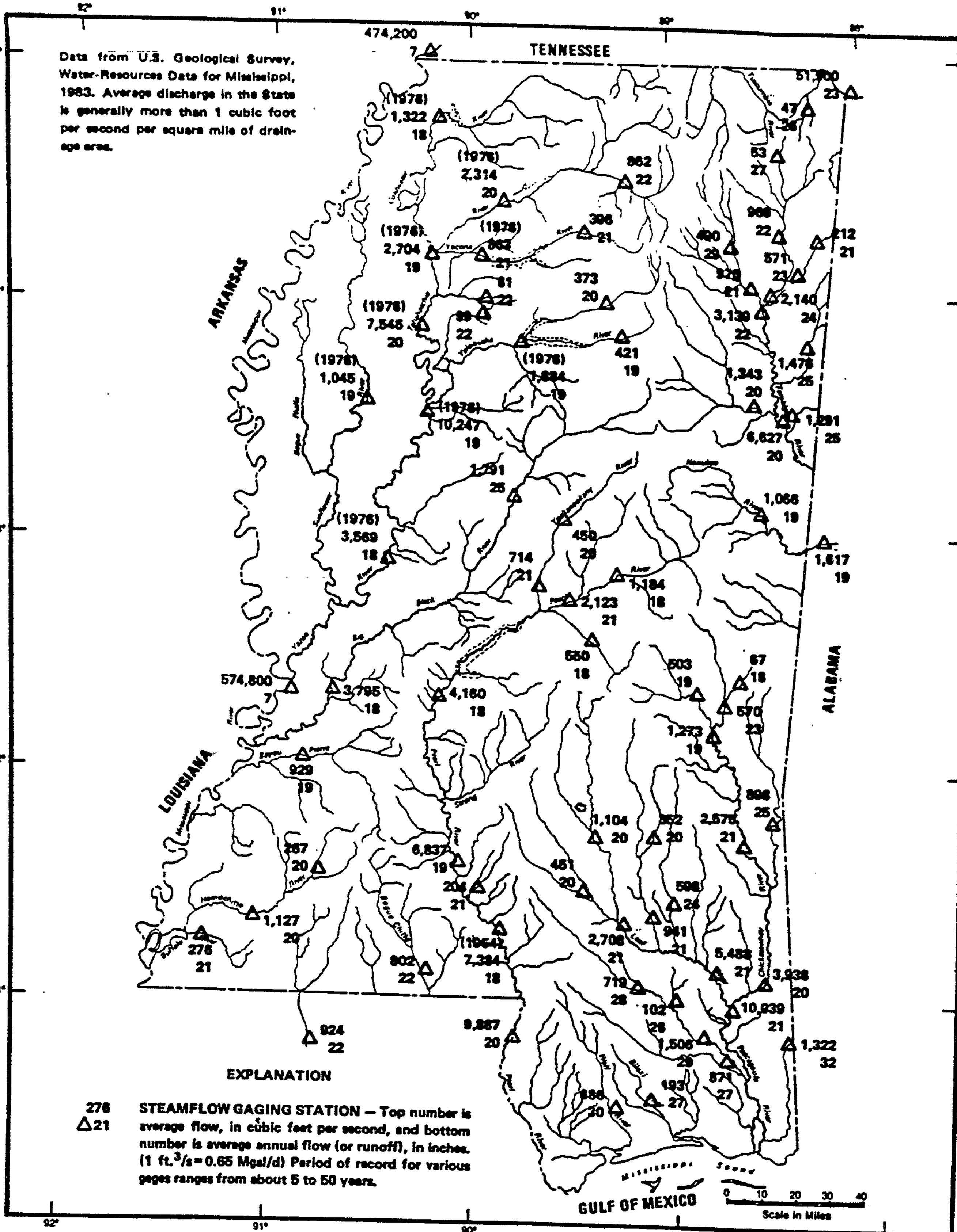
- Mean annual precipitation in inches. From U. S. Weather Bureau, Jackson, Mississippi. Based on the 30-year period 1951-1980.

SOURCES FOR WATER SUPPLIES IN MISSISSIPPI

by B. E. Wasson
Hydrologist
U.S. Geological Survey

A COOPERATIVE STUDY SPONSORED BY THE
U. S. GEOLOGICAL SURVEY
and the
Mississippi Research and Development Center
JACKSON, MISSISSIPPI
REVISED 1986

REFERENCE 9



- Average flow at selected streamgaging sites in cubic feet per second and in inches per year for periods of record through 1983 water year. (If end of record for station is earlier than 1983, the date is shown in parentheses.)

TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

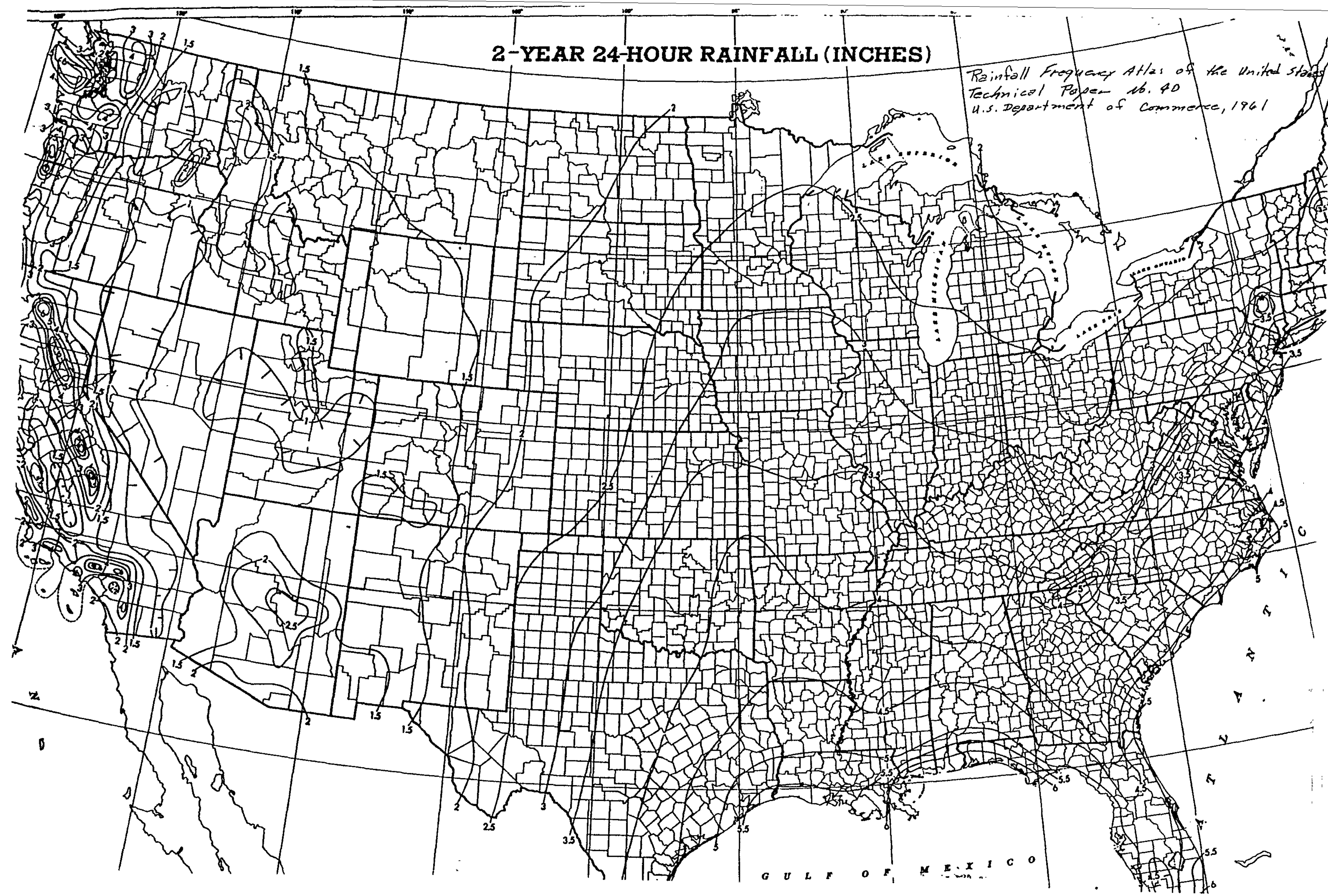
for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division

for

Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

REFERENCE 10


2-YEAR 24-HOUR RAINFALL (INCHES)
Rainfall Frequency Atlas of the United States
Technical Paper No. 40
U.S. Department of Commerce, 1961
GULF OF MEXICO

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

JACKSON COUNTY,
MISSISSIPPI
(UNINCORPORATED AREAS)

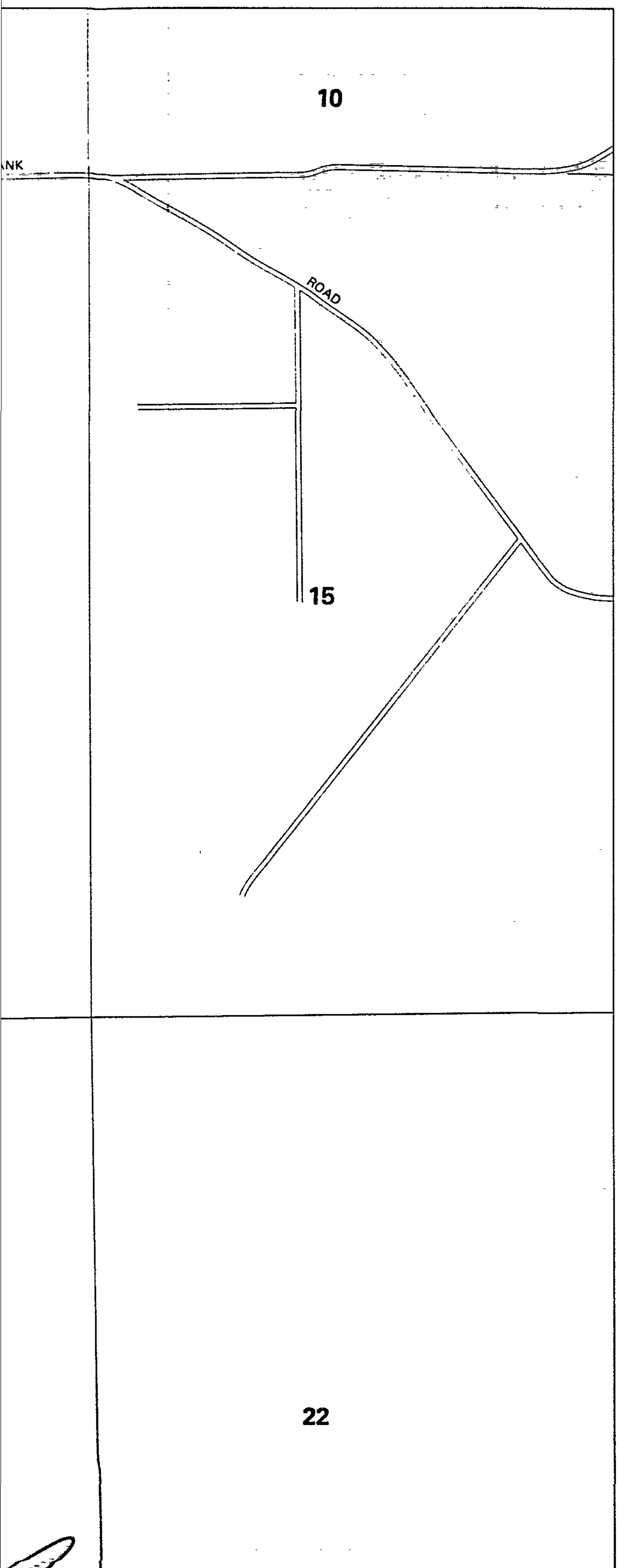
PANEL 140 OF 275
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
285256 0140 D

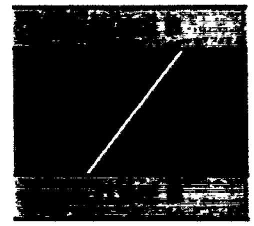
MAP REVISED:
SEPTEMBER 4, 1987

Federal Emergency Management Agency

Reference 11



KEY TO MAP



500-Year Flood Boundary
100-Year Flood Boundary
Zone Designations*

100-Year Flood Boundary
500-Year Flood Boundary

Base Flood Elevation Line With Elevation In Feet**	~~~513~~~
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7×
Zone D Boundary	— — —
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

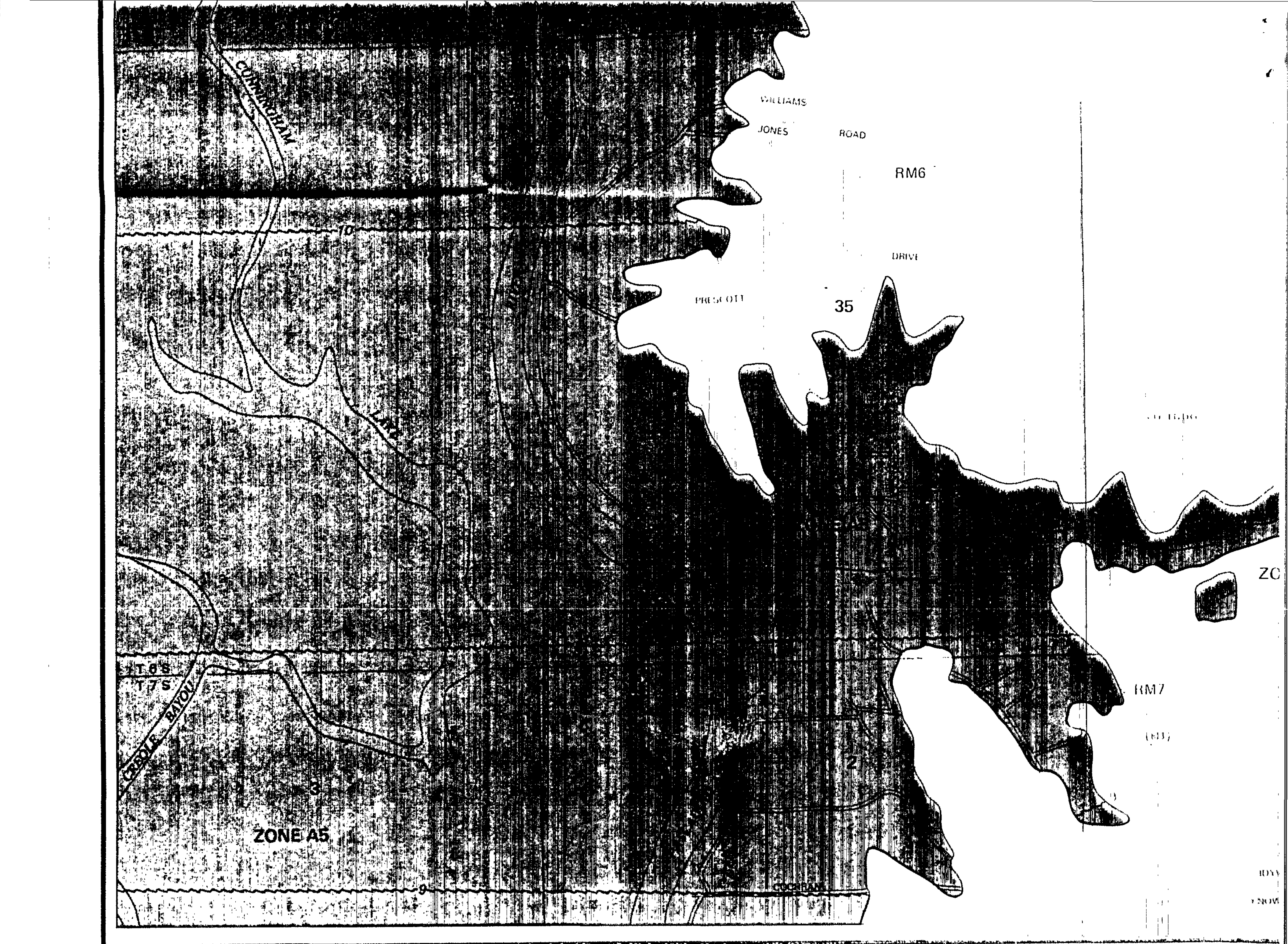
Certain areas not in the special flood hazard areas (Zones A and V) may be protected by flood control structures.

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside special flood hazard areas.

The coastal flooding elevations shown may include the effects of wave action and differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Coastal base flood elevations apply only landward of the shoreline shown on this map.

Corporate limits shown are current as of the date of this map. The



CUNNINGHAM
WILLIAMS
JONES
ROAD
RM6
10
DRIVE
PRESCOTT
35
ZO
T 6 S
T 7 S
RM7
CREOLE BAYOU
2
3
ZONE A5
9


WILLIAMS
JONES
ROAD
RM6
DRIVE
PRESCOTT
35
COVENTRY
RM7
613
9

Series 1960, No. 18

Issued June 1964

SOIL SURVEY

Jackson County Mississippi

OUR SOIL ★ OUR STRENGTH

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

Reference 12

their estimated physical properties—Continued

Depth from surface	Classification			Grain sizes—		Permeability	Available water capacity	Dispersion	Shrink-swell potential
	USDA texture	Unified	AASHO	Passing No. 10 sieve (2.0 mm.)	Passing No. 200 sieve (0.074 mm.)				
Inches				*Percent*	*Percent*	*Inches per hour*	*Inches per inch*		
0 to 4	Loam	SM-CL	A-4, A-6	100	35 to 55	0.20 to 0.80	0.10	Low	Moderate.
4 to 24	Varied					0.05 to 0.20	0.10 to 0.25.	Moderate to low.	Moderate.
24 to 50	Clay	CH	A-7	100	70 to 90	<0.05	0.22	Moderate to low.	High.
Varied	Varied								

[3] Inundated.

fill. Rains and Lynchburg soils are fair to good sources of fill.

Bayboro, Coxville, and Dunbar soils are fine textured. They contain a moderate amount of montmorillonite clay, and consequently they have a fairly high shrink-swell potential. These soils are sticky when wet. Permeability is slow, and the dispersion rate is low.

Bayboro, Coxville, and Dunbar soils need special preparation if used as roadbeds and building sites. They are poor for subgrades because contraction and expansion cause pavements to warp and crack. Cracking and warping can be minimized by using a foundation course (a thick layer of soil that shrinks and swells very little) beneath the pavement. The foundation course should extend through the shoulder of the road.

Coastal Plain Hills.—This part of the county consists of broad, nearly level to rolling uplands. The major streams have developed distinct valleys, and the soils in general have good surface drainage. Eustis, Lakeland, Klej, Ruston, Orangeburg, Goldsboro, Susquehanna, Bowie, and Boswell soils are predominant. They are predominantly well drained and moderately well drained. Ruston, Orangeburg, Lakeland, Eustis, Klej, and Goldsboro soils are medium textured to coarse textured. Permeability is moderate to rapid, and the dispersion rate is high. These soils are good sources of sand and fill and need little, if any, special preparation if used as roadbeds and building sites. They are stable for subgrades because of the low contraction and expansion. Lakeland, Eustis, and Klej soils are coarse textured, and are poorly suited to use as reservoir areas. Ruston, Orangeburg, and Goldsboro soils are medium textured and have a moderate seepage risk.

Susquehanna, Bowie, and Boswell soils are moderately fine textured to fine textured. They contain a moderate amount of montmorillonite clay, and consequently they have a fairly high shrink-swell potential. Permeability is slow, and the dispersion rate is moderate to low. The subsoil is sticky when wet. These soils need special preparation if used as roadbeds and building sites. They are poor for subgrades because of contraction and expansion. They are generally suited to use as reservoir areas.

Soils in the coastal plain hills are erodible, and ditches and gutters should be protected by sod, pavement, and check dams.

Descriptions of the Soils

In this section the soils mapped in Jackson County are briefly described. Descriptions of the soil series, arranged in alphabetic order, give the characteristics that are common to all the soils in each series. Descriptions of the mapping units give the characteristics that differentiate types and phases within each series. A more detailed description of a modal profile of each soil series is included in the section "Genesis, Morphology, and Classification of the Soils." Information on the use and management of each soil is given in the section "Use and Management of the Soils." Technical terms used in the soil descriptions are defined in the Glossary.

A list of the soils mapped is given in the "Guide to Mapping Units" at the back of this report. The location and distribution of the individual soils are shown on the detailed soil map at the back of this report.

The approximate acreage and proportionate extent of the soils are given in table 11.

Alluvial Land

Alluvial land (Ad).—This land type consists of stratified material of varied textures. It lacks profile development. It consists of recent alluvium deposited by the Pascagoula and Escatawpa Rivers. There are many oxbow lakes and old river runs and countless narrow sloughs

TABLE 11.—*Approximate acreage and proportionate extent of the soils*

Soil	Acres	Percent
Alluvial land	47, 346	9. 9
Bayboro silt loam	9, 896	2. 1
Bowie loam, 0 to 2 percent slopes	3, 262	. 7
Bowie loam, 2 to 5 percent slopes	7, 973	1. 7
Bowie loam, 5 to 8 percent slopes	4, 795	1. 0
Bowie loam, 8 to 12 percent slopes	862	. 2
Coastal beach	2, 861	. 6
Coxville silt loam	5, 844	1. 2
Dunbar loam, 0 to 2 percent slopes	7, 287	1. 5
Dunbar loam, 2 to 5 percent slopes	1, 047	. 2
Dune land	1, 819	. 4
Eustis loamy sand, 0 to 5 percent slopes	12, 399	2. 6
Eustis loamy sand, 5 to 8 percent slopes	1, 713	. 4
Eustis loamy sand, 8 to 17 percent slopes	815	. 2
Eustis and Lakeland sands, 0 to 8 percent slopes	2, 486	. 5
Eustis and Lakeland sands, 8 to 12 percent slopes	357	. 1
Fairhope very fine sandy loam, 0 to 2 percent slopes	367	. 1
Fairhope very fine sandy loam, 2 to 5 percent slopes	1, 332	. 3
Fairhope very fine sandy loam, 5 to 8 percent slopes	568	. 1
Goldsboro loam, 0 to 2 percent slopes	17, 368	3. 6
Goldsboro loam, 2 to 5 percent slopes	34, 858	7. 3
Goldsboro loam, 5 to 8 percent slopes	6, 187	1. 3
Grady soils	974	. 2
Klej loamy sand, 0 to 5 percent slopes	18, 409	3. 9
Klej loamy sand, 5 to 12 percent slopes	5, 772	1. 2
Lakeland loamy sand, 0 to 5 percent slopes	3, 008	. 6
Lakeland loamy sand, 5 to 8 percent slopes	1, 057	. 2
Lakeland loamy sand, 8 to 17 percent slopes	324	. 1
Lynchburg very fine sandy loam, 0 to 2 percent slopes	15, 378	3. 2
Lynchburg very fine sandy loam, 2 to 5 percent slopes	14, 472	3. 0
Made land	1, 500	. 3

Soil	Acres	Percent
Norfolk fine sandy loam, 0 to 2 percent slopes	3, 382	.
Norfolk fine sandy loam, 2 to 5 percent slopes	19, 160	4.
Norfolk fine sandy loam, 5 to 8 percent slopes	5, 261	1.
Norfolk fine sandy loam, 8 to 12 percent slopes	1, 380	.
Orangeburg fine sandy loam, 0 to 2 percent slopes	488	.
Pheba loam, 0 to 2 percent slopes	3, 494	.
Pheba loam, 2 to 5 percent slopes	897	.
Plummer loamy sand	14, 432	3.
Plummer loamy sand, dark surface	1, 904	.
Rains loam, dark surface	54, 651	11.
Ruston and Orangeburg fine sandy loams, 0 to 2 percent slopes	3, 834	.
Ruston and Orangeburg fine sandy loams, 2 to 5 percent slopes	12, 627	2.
Ruston and Orangeburg fine sandy loams, 5 to 8 percent slopes	3, 786	.
Ruston and Orangeburg fine sandy loams, 8 to 12 percent slopes	1, 809	.
Ruston and Orangeburg fine sandy loams, 12 to 17 percent slopes	476	.
Sandy and clayey land	13, 224	2.
Savannah loam, 0 to 2 percent slopes	551	.
Savannah loam, 2 to 5 percent slopes	627	.
Scranton loamy sand, 0 to 2 percent slopes	6, 438	1.
Scranton loamy sand, 2 to 5 percent slopes	809	.
Susquehanna, Bowie, and Boswell soils, 2 to 5 percent slopes	5, 926	1.
Susquehanna, Bowie, and Boswell soils, 5 to 8 percent slopes	7, 080	1.
Susquehanna, Bowie, and Boswell soils, 8 to 12 percent slopes	4, 114	.
Swamp	53, 360	11.
Tidal marsh	24, 114	5.
Total	476, 160	100.

in these areas. Floods occur several times a year, and water drains off slowly.

Alluvial land is heavily forested with ash, tupelo-gum, sweetgum, and oaks. In the sloughs are baldcypress and water tupelo. (Capability unit Vw-3; woodland group 1; forage site E)

Bayboro Series

The Bayboro series consists of very poorly drained soils of the coastal flatwoods. These soils were formed in acid clay loam of the Coastal Plain. The surface layer is black silt loam. The subsoil is dark-gray clay loam underlain by clay to clay loam at a depth of 24 to 55 inches.

These soils are moderately low in natural fertility, moderate to high in organic-matter content, and strongly acid or very strongly acid.

Bayboro soils occur on broad, level to nearly level areas. They are not so fine textured in the subsoil as Coxville soils. They are more poorly drained than Dunbar soils.

Bayboro soils occur as large areas, chiefly in the southern part of the county. Natural vegetation consists of slash pine, pondcypress, blackgum, and an understory of wiregrass, rushes, sedges, and gallberry. Poor drainage limits the suitability of these soils for cultivation.

Bayboro silt loam (Bo).—This is a poorly drained soil of the coastal flatwoods. The major horizons are—

0 to 8 inches, black, friable silt loam; fine, crumb structure.
8 to 24 inches, dark-gray clay loam mottled with yellowis brown; medium, blocky structure.
24 to 42 inches, gray, firm clay loam mottled with yellowis brown and red; medium, blocky structure.

The surface layer ranges from sandy loam to silt loa It is 3 to about 9 inches thick. The subsoil is claye Included in the areas mapped are areas of Coxville an Dunbar soils that are too small to be mapped separatel.

This soil is strongly acid. Natural fertility is moderat ly low. The available moisture capacity is medium t high. The subsoil is slowly permeable. It is sticky whe wet, and it is hard and cracked when dry. Slow perm ability and lack of slope cause surface ponding. Til is good. (Capability unit IIIw-4; woodland group forage site A)

Boswell Series

The Boswell series consists of gently sloping to strong sloping, moderately well drained soils of the upland These soils were formed in clayey Coastal Plain materi The surface layer is dark grayish-brown very fine san loam, and the subsoil is yellowish-red, plastic clay.

These soils are low in natural fertility, low in organi matter content, and very strongly acid.

Boswell soils occur with Bowie and Susquehanna soi Boswell soils are similar to Susquehanna soils in textu cent slopes, it loses more water through runoff, and it is more likely to erode. The surface layer is 5 to 7 inches thick.

All of this soil is used for the production of wood crops. (Capability unit VIs–1; woodland group 7; forage site C)

Eustis and Lakeland sands, 0 to 8 percent slopes (EuC).—This unit occurs as relatively small areas throughout the county.

The major horizons of Eustis sand are—

0 to 13 inches, very dark gray to brown sand.
13 to 50 inches, yellowish-brown to strong-brown loamy sand.
50 to 72 inches +, reddish-yellow, loose sand mottled with pale brown.

The major horizons of Lakeland sand are—

0 to 5 inches, grayish-brown, loose sand.
5 to 28 inches, brownish-yellow fine sand.
28 to 54 inches +, yellow to reddish-yellow, loose fine sand.

Water moves into and through these soils at a very rapid rate. The available moisture capacity is very low. Natural fertility is low, and the organic-matter content is low. The reaction is strongly acid.

These soils are low in productivity. They support sparse stands of scrub oak, longleaf pine, shrubs, and grass. (Capability unit IVs–2; woodland group 6; forage site C)

Eustis and Lakeland sands, 8 to 12 percent slopes (EuD).—These soils are more susceptible to erosion than Eustis and Lakeland sands, 0 to 8 percent slopes. They are porous, and much of the rainwater percolates through them. The available moisture capacity is very low. (Capability unit VIs–1; woodland group 6; forage site C)

Fairhope Series

The Fairhope series consists of moderately well drained soils of the coastal flatwoods. These soils were formed in beds of heavy clay and fine sandy clay. The slope range is 0 to 8 percent.

These soils are low in natural fertility, moderate in available moisture capacity, and low in organic-matter content.

Fairhope soils are better drained than Coxville, Dunbar, and Bayboro soils. They are redder than Goldsboro soils and are finer textured in the subsoil.

Fairhope soils occur as narrow bands along drainageways, mainly north of the Escatawpa River. The native vegetation is a mixed stand of hardwoods, longleaf pine, and loblolly pine. The understory is gallberry, waxmyrtle, low shrubs, and grass. These soils are suited to most pasture crops and to a limited number of row crops.

Fairhope very fine sandy loam, 2 to 5 percent slopes (FaB).—This is a moderately well drained soil of the coastal flatwoods. The major horizons are—

0 to 7 inches, dark grayish-brown, friable very fine sandy loam; weak, medium, crumb structure.
7 to 21 inches, yellowish-brown to yellowish-red loam to clay loam; moderate, medium, blocky structure.
21 to 50 inches +, mottled, brown, red, yellowish-red, brownish-gray, and light-gray clay; strong, medium, blocky structure.

The surface layer is 5 to 7 inches thick. In some areas the upper subsoil at 7 to 21 inches is sandier than in the profile described.

This soil is strongly acid. Natural fertility is low, and the organic-matter content is low. Water moves into and through the upper layer at a moderate rate but is retarded in the clay layer. Runoff is moderate.

This soil is suited to wood crops, to a limited number of row crops, and to pasture. All of the acreage is in forest. (Capability unit IIe–3; woodland group 9; forage site A)

Fairhope very fine sandy loam, 0 to 2 percent slopes (FaA).—The surface layer of this soil is 7 to 9 inches thick. Runoff is slow. This soil can be worked easily over a wide range of moisture content. Surface drainage is needed if row crops are grown. (Capability unit IIw–3; woodland group 9; forage site A)

Fairhope very fine sandy loam, 5 to 8 percent slopes (FaC).—This soil is more susceptible to erosion than Fairhope very fine sandy loam, 2 to 5 percent slopes. The surface layer is 5 to 7 inches thick. Runoff is rapid. All of the acreage is used for the production of wood crops. (Capability unit IIIe–2; woodland group 9; forage site A)

Goldsboro Series

The Goldsboro series consists of nearly level to moderately sloping, moderately well drained soils that were formed in medium-textured Coastal Plain material. The surface layer is very dark gray loam, and the subsoil is yellowish-brown loam. The subsoil is mottled at a depth of about 24 inches.

These soils are low in natural fertility, low to moderate in organic-matter content, and strongly acid.

Goldsboro soils occur with Norfolk, Dunbar, and Lynchburg soils on the uplands. Goldsboro soils are more poorly drained than Norfolk soils. They are better drained than Dunbar soils and are coarser textured in the lower part of the subsoil. They are better drained than Lynchburg soils.

Goldsboro soils occur as fairly large areas throughout the county. The native vegetation consists mostly of longleaf pine, but includes some loblolly pine, slash pine, and hardwoods. The understory consists chiefly of dogwood, hawthorn, gallberry, and grass. Most of the acreage is in forest. Some areas are used for crops and pasture. These soils are well suited to truck crops, row crops, pasture, and pecans.

Goldsboro loam, 0 to 2 percent slopes (GoA).—This is a moderately well drained soil of the uplands. The major horizons are—

0 to 9 inches, very dark gray to light olive-brown, friable loam; crumb structure.
9 to 33 inches, yellowish-brown to olive-yellow, friable loam mottled with yellowish red and pale yellow; moderate, blocky structure.
33 to 50 inches +, light olive-brown, friable loam mottled with yellowish brown and pale yellow; moderate, blocky structure.

Areas under cultivation have a light olive-brown plow layer. The texture of the surface layer ranges from sandy loam to silt loam. The subsoil is chiefly loam, but in some places it is sandy loam or clay loam. Depth to mottling ranges from 18 to 30 inches. Included in the areas mapped are areas of Lynchburg and Norfolk soils that are too small to be mapped separately.

cent slopes, and they lose more water through runoff. The erosion hazard would be severe if these areas were cleared. All of the acreage is now in forest. (Capability unit VIe-2; woodland group 9; forage site B)

Susquehanna, Bowie, and Boswell soils, 8 to 12 percent slopes (SuD).—These soils occur as narrow bands along drainageways. They have more rapid runoff than Susquehanna, Bowie, and Boswell soils, 2 to 5 percent slopes, and are more likely to erode if the areas are cleared or disturbed. The total acreage is small, and all of it is in forest. (Capability unit VIe-2; woodland group 9; forage site B)

Swamp

Swamp (Sw).—This land type consists of level to gently sloping, poorly drained areas of coarse-textured to medium-textured, highly organic soil material that is stratified with layers of mineral soil.

The soil material is strongly acid. Fertility is usually low. The available moisture capacity is variable. Water stands on the surface a large part of the year if rainfall is average.

The Swamp areas of Jackson County occur along minor streams, along intermittent drainageways, and in depressions. The vegetation consists of a dense growth of bay, tupelo-gum, titi, and gallberry. These areas are best used for growing hardwoods or to provide wildlife habitats. (Capability unit VIIw-1; woodland group 11; forage site E)

Tidal Marsh

Tidal marsh (Tm).—This land type occurs along the coast. It is covered by or adjoins salt or brackish water. The three main areas are around Graveline Bayou, around Bangs Lake, and along the Pascagoula River and its tributaries. The largest area is between the East Pascagoula River and the West Pascagoula River. In this area the soil material is composed principally of brown, partly decomposed marsh grass over mineral soil material. Variations occur in the degree of decomposition and in depth to and in character of the mineral material. The greatest variations occur in the area at Bangs Lake where high tides and waves have deposited sand. Along the coast, where the water is always salty, the vegetation is predominantly marsh grass. Along the Pascagoula River, where the water is brackish, there are more and larger trees. (Capability unit VIIw-2; forage site D)

Genesis, Morphology, and Classification of the Soils

This section consists of two main parts. The first part discusses the factors of soil formation as they relate to the development of soils in Jackson County. The second part discusses the great soil groups in the county, classifies the soil series according to great soil groups and orders, describes the characteristics of each group, and describes a profile representative of each series.

Factors of Soil Formation

Soil is the product of the forces of weathering and other soil development agencies acting upon material deposited or accumulated by geologic agencies. The characteristics of the soil are determined by the physical and mineralogical composition of the parent material; the climate under which the soil material has accumulated and has existed since accumulation; the plant and animal life in and on the soil; the relief, or lay of the land; and the length of time the forces of development have acted on the material.

Climate and vegetation are the active forces of soil formation. They act on parent material accumulated through the weathering of rocks and slowly change it into a natural body with genetically related horizons. The effects of climate and vegetation are conditioned by relief. The nature of the parent material also affects the kind of profile that can be formed and in extreme cases may dominate it. Finally, time is needed for the changing of the parent material into a profile. The time needed for horizon differentiation may be much or little, but some time is always required. Usually a long time is required for the development of distinct horizons.

The factors of soil genesis are so closely interrelated in their effects on the soil that few generalizations can be made regarding the effects of any one unless conditions are specified for the other four. The effects of climate on soil development depend not only on such factors as temperature, rainfall, and humidity, but also on the physical characteristics of the soil material and on the relief. Relief, in turn strongly influences drainage, aeration, runoff, erosion, and exposure to sun and wind. Many of the processes of soil development are unknown.

Brief discussions of the factors of soil formation in Jackson County follow.

Parent material

The parent material of the soils of Jackson County consists of unconsolidated beds of fine-textured to coarse-textured Coastal Plain deposits.

The formations are coastal deposits of the Recent and Pleistocene epochs, the Citronelle of the Pliocene epoch, and the Pascagoula and Hattiesburg of the Miocene epoch.

The bright-colored soils of Jackson County developed from material that, throughout the period of soil development, was entirely above the ground-water level, and consequently was subjected only to the influence of such water as has percolated through it from the surface. The dark-colored soils are on the low, flat areas where the water table is high and drainage is poor.

Table 12 shows the texture of the parent material and the drainage sequence of each soil series. About half of the soils in the county formed from medium-textured Coastal Plain material, about 22 percent from moderately fine textured Coastal Plain material, about 20 percent from coarse-textured Coastal Plain material, and 8 percent from fine-textured Coastal Plain material.

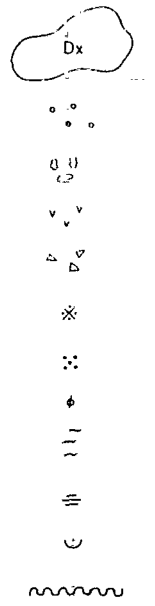
The soils are strongly acid to very strongly acid because calcium carbonate was lacking in most areas and was leached out in the other areas.

Climate

The climate of Jackson County is that of the warmer part of the North Temperate Zone. The temperature is


sheet 38)
R. 6 W.
R. 5 W.
BAYOU
CLARK
BAYOU
BAYOU
Robinson
RIVER
CUNNINGHAM
LAKE
43
24
25
26
35
36
63
Ad
Cx
Ba
DbA
GoA
GoB
NoA
BoA
FaB
Ra
LyA
KsB
Sw
sheet 54)

LY DATA



SOIL LEGEND

The first capital letter in each symbol is the initial one of the soil name. A second capital letter, A, B, C, D, or E, shows the slope. Most symbols without a slope letter are for nearly level soils or land types, but some are for soils or land types that have a range in slope.

SYMBOL	NAME
Ad	Alluvial land
Ba	Bayboro silt loam
BoA	Bowie loam, 0 to 2 percent slopes
BoB	Bowie loam, 2 to 5 percent slopes
BoC	Bowie loam, 5 to 8 percent slopes
BoD	Bowie loam, 8 to 12 percent slopes
Cb	Coastal beach
Cx	Coxville silt loam
DbA	Dunbar loam, 0 to 2 percent slopes
DbB	Dunbar loam, 2 to 5 percent slopes
Du	Dune land
EsB	Eustis loamy sand, 0 to 5 percent slopes
EsC	Eustis loamy sand, 5 to 8 percent slopes
EsE	Eustis loamy sand, 8 to 17 percent slopes
EuC	Eustis and Lakeland sands, 0 to 8 percent slopes
EuD	Eustis and Lakeland sands, 8 to 12 percent slopes
FaA	Fairhope very fine sandy loam, 0 to 2 percent slopes
FaB	Fairhope very fine sandy loam, 2 to 5 percent slopes
FaC	Fairhope very fine sandy loam, 5 to 8 percent slopes
GoA	Goldsboro loam, 0 to 2 percent slopes
GoB	Goldsboro loam, 2 to 5 percent slopes
GoC	Goldsboro loam, 5 to 8 percent slopes
Gr	Grady soils
KsB	Klej loamy sand, 0 to 5 percent slopes
KsD	Klej loamy sand, 5 to 12 percent slopes
LaB	Lakeland loamy sand, 0 to 5 percent slopes
LaC	Lakeland loamy sand, 5 to 8 percent slopes
LaE	Lakeland loamy sand, 8 to 17 percent slopes
LyA	Lynchburg very fine sandy loam, 0 to 2 percent slopes
LyB	Lynchburg very fine sandy loam, 2 to 5 percent slopes
Ma	Made land
NoA	Norfolk fine sandy loam, 0 to 2 percent slopes
NoB	Norfolk fine sandy loam, 2 to 5 percent slopes
NoC	Norfolk fine sandy loam, 5 to 8 percent slopes
NoD	Norfolk fine sandy loam, 8 to 12 percent slopes
OrA	Orangeburg fine sandy loam, 0 to 2 percent slopes
PhA	Pheba loam, 0 to 2 percent slopes
PhB	Pheba loam, 2 to 5 percent slopes
Pm	Plummer loamy sand
Pn	Plummer loamy sand, dark surface
Ra	Rains loam, dark surface
RoA	Ruston and Orangeburg fine sandy loams, 0 to 2 percent slopes
RoB	Ruston and Orangeburg fine sandy loams, 2 to 5 percent slopes
RoC	Ruston and Orangeburg fine sandy loams, 5 to 8 percent slopes
RoD	Ruston and Orangeburg fine sandy loams, 8 to 12 percent slopes
RoE	Ruston and Orangeburg fine sandy loams, 12 to 17 percent slopes
Sa	Sandy and clayey land
SbA	Savannah loam, 0 to 2 percent slopes
SbB	Savannah loam, 2 to 5 percent slopes
ScA	Scranton loamy sand, 0 to 2 percent slopes
ScB	Scranton loamy sand, 2 to 5 percent slopes
SuB	Susquehanna, Bowie, and Boswell soils, 2 to 5 percent slopes
SuC	Susquehanna, Bowie, and Boswell soils, 5 to 8 percent slopes
SuD	Susquehanna, Bowie, and Boswell soils, 8 to 12 percent slopes
Sw	Swamp
Tm	Tidal marsh

Soil map constructed 1962 by Cartographic Division, Soil Conservation Service, USDA, from 1958 aerial photographs. Controlled mosaic based on Mississippi plane coordinate system, east zone, transverse Mercator projection, 1927 North American datum.

ENDANGERED AND THREATENED SPECIES

U.S. FISH AND WILDLIFE SERVICE

REGION 4 - ATLANTA

REFERENCE 13

Federally Listed Species by State

MISSISSIPPI

(E=Endangered; T=Threatened; CH=Critical Habitat determined)

Mammals	General Distribution
Panther, Florida (*Felis concolor coryi*) - E	Entire state
Whale, right (*Eubalaena glacialis*) - E	Coastal waters
Whale, finback (*Balaenoptera physalus*) - E	Coastal waters
Whale, humpback (*Megaptera novaeangliae*) - E	Coastal waters
Whale, sei (*Balaenoptera borealis*) - E	Coastal waters
Whale, sperm (*Physeter catodon*) - E	Coastal waters

Birds	
Crane, Mississippi sandhill (*Grus canadensis pulla*) - E,CH	Southern Jackson County
Eagle, bald (*Haliaeetus leucocephalus*) - E	Entire state
Falcon, Arctic peregrine (*Falco peregrinus tundrius*) - T	Entire state
Pelican, brown (*Pelecanus occidentalis*) - E	Coast
Plover, piping (*Charadrius melodus*) - T	Coast
Tern, least (*Sterna antillarum*); interior population - E	Mississippi River
Warbler, Bachman's (*Vermivora bachmanii*) - E	Entire state
Woodpecker, ivory-billed (*Campephilus principalis*) - E	West, South, East Central
Woodpecker, red-cockaded (*Picoides* (=*Dendrocopos*) *borealis*) - E	Entire state

Reptiles	
Alligator, American (*Alligator mississippiensis*) - T (S/A)*	South and West
Snake, eastern indigo (*Drymarchon corais couperi*) - T	South
Tortoise, gopher (*Gopherus polyphemus*) - T	Lower Gulf Coastal Plain (14 counties)
Turtle, Kemp's (Atlantic) ridley (*Lepidochelys kempii*) - E	Coastal waters
Turtle, green (*Chelonia mydas*) - T	Coastal waters

MISSISSIPPI (cont'd)

	General Distribution
Turtle, hawksbill (*Eretmochelys imbricata*) - E	Coastal waters
Turtle, loggerhead (*Caretta caretta*) - T	Coastal waters
Turtle, ringed sawback (*Graptemys oculifera*) - T	Pearl River
Fishes	
Darter, bayou (*Etheostoma rubrum*) - T	Bayou Pierre drainage
Mollusks	
Mussel, Curtus' (*Pleurobema curtum*) - E	East Fork Tombigbee River
Mussel, Judge Tait's (*Pleurobema taitianum*) - E	East Fork Tombigbee River and Buttahatchie River
Mussel, penitent (*Epioblasma* [=*Dysnomia*] *penita*) - E	East Fork Tombigbee River.
Plants	
Lindera melissifolia (Pondberry) - E	Sharkey and Sunflower Counties

*Alligators are biologically neither endangered nor threatened. For law enforcement purposes they are classified as "Threatened due to Similarity of Appearance." Alligator hunting is regulated in accordance with State law.

U.S Fish and Wildlife Service
Vicksburg Office

SPECIES LIST BY COUNTY

E - Endangered Species
T - Threatened Species
P - Proposed Species
C - Candidate Species
CA - Conservation Agreement
CH - Critical Habitat

Ref. 13

MISSISSIPPI

Amite	E - Red-cockaded woodpecker (*Picoides borealis*)
Bolivar	E - Pondberry
Claiborne	T - Bayou darter (*Etheostoma rubrum*)
Clark	C - Yellowblotched sawback - *Graptemys flavimaculata*
Copiah	T - Bayou darter (*Etheostoma rubrum*) T - Ringed sawback turtle (*Graptemys oculifera*)
Covington	T - Gopher tortoise (*Gopherus polyphemus*)
Forrest	E - Red-cockaded woodpecker (*Picoides borealis*) T - Gopher tortoise (*Gopherus polyphemus*) C - Yellowblotched sawback - *Graptemys flavimaculata*
Franklin	E - Red-cockaded woodpecker (*Picoides borealis*)
George	E - Red-cockaded woodpecker (*Picoides borealis*) T - Gopher tortoise (*Gopherus polyphemus*) C - Maureen's symnocthebius minute moss beetle C - Yellowblotched sawback - *Graptemys flavimaculata*
Greene	E - Red-cockaded woodpecker (*Picoides borealis*) T - Gopher tortoise (*Gopherus polyphemus*) C - Yellowblotched sawback - *Graptemys flavimaculata*
Hancock	E - Brown pelican (*Pelecanus occidentalis*) T - Gopher tortoise (*Gopherus polyphemus*)
Harrison	E - Red-cockaded woodpecker (*Picoides borealis*) E - Bald eagle (*Haliaeetus leucocephalus*) E - Eastern indigo snake (*Drymarchon corais couperi*) E - Brown pelican (*Pelecanus occidentalis*) T - Gopher tortoise (*Gopherus polyphemus*)
Hinds	T - Bayou darter (*Etheostoma rubrum*) T - Ringed sawback turtle (*Graptemys oculifera*)
Itawamba	E - Curtus' mussel (*Pleurobema curtum*) E - Penitent shell mussel (*Epioblasma penita*) E - Judge Tait's mussel (*Pleurobema taitianum*) C - Southern clubshell *Pleurobema decisum*
Jackson	E - Brown pelican (*Pelecanus occidentalis*) E - Red-cockaded woodpecker (*Picoides borealis*) E - Mississippi sandhill crane (CH) (*Grus canadensis pulla*) T - Gopher tortoise (*Gopherus polyphemus*) C - Yellowblotched sawback - *Graptemys flavimaculata*

Endangered Species
O F M I S S I S S I P P I

MUSSELS

	Federal Status
Alabama Moccasinshell (*Medionidus acutissimus*)	Threatened (Proposed)
Black clubshell (*Pleurobema curtum*)	Endangered
Inflated Heelsplitter (*Potamilus inflatus*)	Threatened
Orange-nacre Mucket (*Lampsilis perovalis*)	Threatened (Proposed)
Ovate Clubshell (*Pleurobema perovatum*)	Endangered (Proposed)
Southern Clubshell (*Pleurobema decisum*)	Endangered (Proposed)
Southern Combshell (*Epioblasma penita*)	Endangered
Southern Pink Pigtoe (*Pleurobema taitianum*)	Endangered
Southern Round Pigtoe (*Pleurobema marshalli*)	Endangered
Stirrupshell (*Quadrula stapes*)	Endangered

INSECT

American Burying Beetle (*Nicrophorus americanus*)	Endangered

FISH

Southern Redbelly Dace[1] (*Phoxinus erythrogaster*)	None
Bayou Darter (*Etheostoma rubrum*)	Threatened
Crystal Darter (*Crystallaria asprella*)	Candidate, Category 2
Frecklebelly Madtom (*Noturus munitus*)	Candidate, Category 2
Alabama Sturgeon (*Scaphirhynchus suttkusi*)	Candidate, Category 1
Gulf Sturgeon (*Acipenser oxyrhynchus desotoi*)	Threatened
Pallid Sturgeon (*Scaphirhynchus albus*)	Endangered

AMPHIBIANS

Dusky Gopher Frog (*Rana capito sevosa*)	Candidate, Category 1
Cave Salamander (*Eurycea lucifuga*)	None
Green Salamander (*Aneides aeneus*)	Candidate Category 2
Spring Salamander (*Gyrinophilus porphyriticus*)	None

REPTILES

Black Pine Snake (*Pituophis melanoleucus lodingi*)	Candidate Category 2
Eastern Indigo Snake (*Drymarchon corais couperi*)	Threatened
Rainbow Snake (*Farancia erytrogramma*)	None
Southern Hognose Snake (*Heterodon simus*)	None
An Undescribed Redbelly Turtle (*Pseudemys sp.*)	None
Black-knobbed Sawback (*Graptemys nigrinoda*)	None
Ringed Sawback (*Graptemys oculifera*)	Threatened
Yellow-blotched Sawback (*Graptemys flavimaculata*)	Threatened
Gopher Tortoise (*Gopherus polyphemus*)	Threatened
Atlantic Ridley (*Lepidochelys kempi*)	Endangered
Green Turtle (*Chelonia mydas*)	Threatened
Hawksbill Turtle (*Eretmochelys imbricata*)	Endangered
Loggerhead Turtle (*Caretta caretta*)	Threatened
Leatherback Turtle (*Dermochelys coriacea*)	Endangered

Reference 14

BIRDS

Mississippi Sandhill Crane (*Grus canadensis pulla*)	Endangered
Bald Eagle (*Haliaeetus leucocephalus*)	Endangered
Peregrine Falcon (*Falco peregrinus*)	Endangered
Brown Pelican (*Pelecanus occidentalis*)	Endangered
Piping Plover (*Charadrius melodus*)	Threatened
Snowy Plover (*Charadrius alexandrinus*)	Candidate, Category 2
Wood Stork (*Mycteria americana*)	None
Least Tern[2] (*Sterna antillarum*)	Endangered
Bachman's Warbler (*Vermivora bachmanii*)	Endangered
Ivory-billed woodpecker (*Campephilus principalis*)	Endangered
Red-cockaded Woodpecker (*Picoides borealis*)	Endangered
Bewick's Wren (*Thryomanes bewickii*)	None

MAMMALS

Gray Bat (*Myotis grisescens*)	Endangered
Indiana Bat (*Myotis sodalis*)	Endangered
Black Bear (*Ursus americanus*)	Threatened
West Indian Manatee (*Trichechus manatus*)	Endangered
Florida Panther (*Felis concolor coryi*)	Endangered
Whales, Order Cetacea, excluding Family Delphinidae	

PLANT

Pondberry Spicebush (*Lindera melissifolia*)
Price's Potato Bean (*Apios priceana*)

[1]West Mississippi disjunct population
[2]Interior population nesting along the Mississippi River

Endangered Species of Mississippi
Miss. Department of Wildlife, Fisheries & Parks
Museum of Natural Science
111 North Jefferson Street
Jackson, MS 39201
(601) 354-7303

Funded in part by:
US Fish and Wildlife Service

EPA in cooperation with Mississippi Department of Agriculture and Commerce, Bureau of Plant Industry

Printed on Recycled Paper
1992

U.S. DEPARTMENT OF COMMERCE
FREDERICK H. MUELLER, *Secretary*

WEATHER BUREAU
F. W. REICHELDERFER, *Chief*

TECHNICAL PAPER NO. 37

Evaporation Maps for the United States

M. A. KOHLER, T. J. NORDENSON, and D. R. BAKER
Hydrologic Services Division

WASHINGTON, D.C.
1959

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. - Price 65 cents

REFERENCE 15

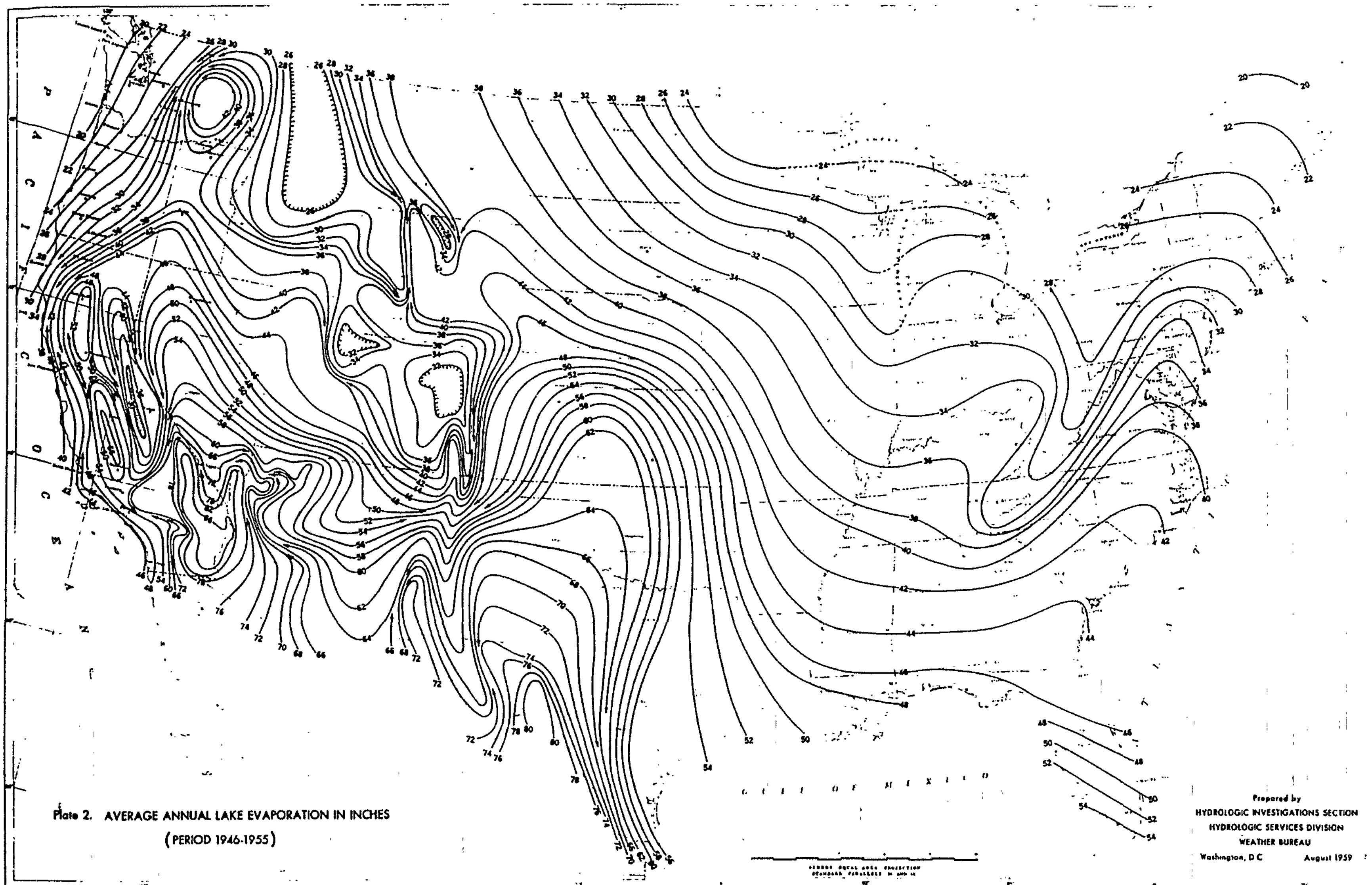


Plate 2. AVERAGE ANNUAL LAKE EVAPORATION IN INCHES
(PERIOD 1946-1955)

Prepared by
HYDROLOGIC INVESTIGATIONS SECTION
HYDROLOGIC SERVICES DIVISION
WEATHER BUREAU
Washington, D.C. August 1959

525189 O-59 (Face Blank p. 14) No. 2

MISSISSIPPI
STATE GEOLOGICAL SURVEY

WILLIAM CLIFFORD MORSE, Ph.D.
Director

BULLETIN 60

GEOLOGY AND GROUND-WATER RESOURCES of the COASTAL AREA IN MISSISSIPPI

by

GLEN FRANCIS BROWN, VELORA MEEK FOSTER, ROBERT WYNN ADAMS,
EDWIN WILLIAM REED, HAROLD DEMENT PADGETT, JR.

In cooperation with the
United States Geological Survey

UNIVERSITY, MISSISSIPPI
1944

Reference 18

Specific acknowledgments to drillers who furnished well records published in this report are given in the tables of logs and well records (Tables 13-18).

GEOMORPHOLOGY

GENERAL FEATURES OF THE COASTAL BELT

The three broad divisions of land-forms in the small portion of the Gulf coastal plain here considered are the long leaf pine hills, the coastal pine meadows, and the alluvial plains of the larger streams, principally the Pearl and Pascagoula Rivers. The alluvial plains merge with the coastal pine meadows; both are relatively flat and locally swampy. The coastal pine meadows lie 5 to 30 feet above the sea; the alluvial plains rise northward to an altitude of 50 feet along Pascagoula and Escatawpa Rivers and to 100 feet along the Pearl River. Both the coastal meadows and the alluvial river bottoms are bordered by salt-water mashes, the largest areas being the estuarine mouths of the Pearl and Pascagoula Rivers. The long leaf pine hills rise from 30 to 370 feet above mean sea level. They include stream-cut terraces along the trunk streams and high terrace deposits which extend across the area in a pattern suggesting distributary ridges. Most of the upland topography is the result of recent erosion on weak beds of clay, silty clay, and sandy clay of the Miocene-Pliocene-Pleistocene estuarine and deltaic sediments which underlie it (Plate 4).

The soils have been described as light-colored," sandy types of loam predominating even in areas where the clays of the Miocene, Pliocene, and Pleistocene series are exposed in stream beds. The dark-colored and heavy soils are limited to the swamps and flats underlain with clay where the water table is high and drainage is poor. In most areas the soils are acid, because lime carbonate was originally lacking; in other minor areas, because it was subsequently leached out.

Nearly all of the area has been deforested, most of it since 1900. Long leaf pine formerly predominated on the uplands but was mixed with slash and short leaf pine on the lower terraces. The bottom lands were covered with a variety of deciduous hardwood trees, such as several species of gum and oak, and with evergreens, such as pine, live oak, magnolia, holly, and cypress. Gum, cypress, magnolia, and

rn on the clay terrain of
y pit is at the center of
lge) is 172 feet (Locality
Photo courtesy U. S. Dep
le 1:20,000.

maple are common in the swampy areas where some primitive stands remain because of their inaccessibility. Pine through reforestation and pecan groves, tung trees, and fruit orchards through cultivation now comprise a substantial part of the vegetation. Of the shrubs, saw-tooth and blue palmetto are conspicuous on sandy terrain; and various grasses and sedges dominate the brackish and salt-water marshes where trees are absent.

LONG LEAF PINE HILLS

SURFACE OF THE CITRONELLE FORMATION

The highest upland in the coastal area is on top of the Citronelle formation, a terrace deposit seemingly of fluvial origin. East of the Pascagoula River in George County three benches on this upland lie at altitudes of 200 to 230 feet, 260 to 280 feet, and 300 to 310 feet, the benches sloping upward toward the northeast. In Greene County the upper bench slopes upward to approximately 335 feet; and near Citronelle in Mobile County, Alabama, to approximately 340 feet. West of the Pascagoula River and north of Red Creek the beveled crests slope upward to the northwest, being 160 to 205 feet in northwestern George County, 85 to 230 feet west of Bluff Creek in eastern Stone County, and 170 to 325 feet along U. S. Highway 49 through Wiggins in central Stone County. In western Stone and northeastern Pearl River Counties the crest elevations extend from approximately 230 feet to 370 feet. Doubtless there are benches on this western upland, but they cannot readily be recognized without topographic maps. In southern Pearl River and northern Hancock Counties the Citronelle formation has been warped down in a southwesterly direction until its upper surface disappears beneath younger deposits or is truncated by more recent erosion at altitudes of 60 to 90 feet. In Harrison and western Hancock Counties the crests of deposits, lithologically similar to the Citronelle and mapped with it, drop from heights of about 270 feet (as just across the line in southern Stone County) to about 50 feet where they disappear beneath younger deposits—declines similar to those in eastern Stone and western George Counties.

The greater part of the Citronelle formation is porous sand and gravel; consequently, rain seeps into the ground and erosion has been hindered, particularly prior to deforestation; thus, the upland remains youthful, preserving dune and original depositional features.

the building of sand bars by east-to-west shore-wise drift as suggested by C. Wythe Cooke.

RECENT BEACH AND ISLAND TOPOGRAPHY

Shore-wise currents in the Gulf have formed off-shore bars of sufficient height to be further elevated by the waves into sand spits, and by the southern winds to higher dunes and elongated east-west islands. Dunes on Petit Bois Island, which is 7 1/2 miles long, rise to 20 feet above mean sea level at only one point on the western end; other dunes of heights above 10 feet extend along the southern edge and along part of the northern shore near the eastern end of the island. Much of the eastern part of the island has been washed away since 1921. Horn Island, which is 13 miles long, has several dune peaks above 20 feet, but of very limited extent, and much of the inter-dune area is occupied by brackish water ponds. Ship Island, which is 8 miles long, is about the same general elevation of Horn Island or slightly lower than it. Much of the northern shore of Ship Island is a low cliff which—in at least one place about 3 miles east of Fort Massachusetts where E. N. Lowe photographed a flowing well prior to 1915—has migrated south about 100 yards, leaving the well in Mississippi Sound (Harrison 203, Table 15). Cat Island, westernmost of the barrier islands, is unique in that its eastern portion is a 4-mile spit and dune belt which is perpendicular to the coast. W. T. Penfound and M. E. O'Neill described the island in 1934 as follows:[9]

"Cat Island comprises an area of about seven square miles. It consists of two east-west axes attached at their eastern extremities to a long, narrow, north-south axis which is convex on the gulf side. The more northerly east-west spit is composed of two to sixteen sand ridges from four to ten feet in height and from a few feet to an eighth of a mile in width. These alternate with parallel depressions in which the floor is usually wet and often continuously covered with water, in some places to a depth of six feet. The other spit includes fewer and lower sand ridges and is mainly marshy in character.

"The north-south spit is very different from either of the foregoing. It is composed of an eroding shoreline on the gulf side, various hillocks and dunes on the interior, and a zone of deposition on the western shoreline. On the gulf shoreline ghost forests of pine and oak extend more than a hundred feet into the gulf, and black, peaty soil, which could have been formed only in the marshes, is a conspicuous feature of the lower beach. The dunes vary from small haystack dunes a few feet in height to wandering, barren dunes of considerable extent and up to forty feet in height. They are composed

Figure 7.—The eroded beach at Bellefontaine Point showing encroachment of the sea on a former forest of pine and cypress (Locality U, SW. 1/4, SW. 1/4, Sec. 19, T. 8 S., R. 7 W.), Jackson County.

of a glistening fine to medium white sand with a negligible quantity of organic matter and often very low water content. Throughout the dune area many blow-outs occur, and the Island is constantly changing in topography. At the junction of the east-west spits with the north-south axis the sand is advancing steadily over the marsh. This fact, together with the presence of peaty soil and ghost forests on the gulf shoreline, indicates that the island is gradually moving westward."

On the mainland the recent rise in sea level has submerged much of the lower beach deposits and at the present time is actively eroding the headlands (Figures 7, 8). The beach ridges along the present shore doubtless owe part of their present height (up to [illegible] feet) to Recent wind-blown sand, but the bases may have been formed as true beach ridges when the Gulf stood at a slightly higher level or during storms at its present level.

Chart of Geologic Formations Containing Fresh Water in the Coastal Area of Mississippi

Series	Formation	Known Thickness (feet)	Physical Character	Hydrologic Properties
Pleistocene and Recent	Alluvium	0-35+	Chert and quartz gravels and sands grading up into sandy clays and silt. Much organic debris including sawdust near and in the tidal marshes.	Contains large undeveloped supplies especially attractive because of uniform low temperature (70°F.) throughout the year. The southernmost portions of the Pascagoula River alluvium are known to contain salty water, and the other estuaries are probably similar; consequently large developments should be located with care.
Pleistocene	Pamlico Sand	1-75	Mostly unconsolidated gray and tan sand; locally contains pebbles of quartz and chert and, in former lagoonal areas, much clay and silt.	Contains much water in the beach areas under water-table conditions and in contact with salt water. In many places the supply has been contaminated with sewage, but would be suitable for air-conditioning if salt-water connection is considered.
	Low Terrace Deposits	0-20	Sand derived from beach deposits, locally sprinkled with pebbles of quartz and brown chert.	Insufficient thickness and areal extent to yield other than small shallow wells for domestic and stock consumption.
	High Terrace Deposits	0-100	Sand and gravel wherein quartz is more abundant and chert less abundant than in the older adjacent Citronelle formation; locally an iron-cemented conglomerate at the base.	Small farm supplies are derived from the High terrace deposits. The elevated position facilitates drainage through springs and effluent seepage, so that only the lower few feet are saturated.
	Citronelle Formation	0-160	Brick-red sand and gravelly sand; the pebbles are mostly brown chert and milky quartz; generally cross-bedded, and, in the lower part, contain thin beds and pockets of gray clay and clayey gravel.	Numerous small farm supplies derived from a few feet of saturated sand and gravel in the lower part of the formation. Salt-water encroachment ruined a supply at Moss Point which probably came from a finger of the Citronelle gravel.
Pliocene and Pleistocene	Graham Ferry Formation	113-975	Silty clay and shale, sand, silty sand, and gravelly sand and gravel in heterogeneous deltaic masses; various colors, generally dark; carbonaceous clay most abundant in the outcrops; marine fossil casts in the upper beds are common.	The most intensively developed formation, containing water under artesian pressure throughout southern part of the area. Most water for war purposes has come from the Graham Ferry, and there is no evidence of excessive development.
Miocene	Pascagoula Formation	800-1,300	Clay and shale, generally blue-green, silt, sandy shale, gray and green sand, gray silty clay, and dark sandy gravel containing numerous grains and pebbles of polished black chert; of estuarine or deltaic origin; identified for the most part by a brackish water clam, Rangia johnsoni.	About 40% of water produced in the coastal area has come from artesian sources within the Pascagoula formation. The eastern part, Jackson and eastern Harrison Counties, contains some brackish water, the salt content increasing with depth and towards the east.
	Hattiesburg Formation	350-1,500	Gray-green and blue-green shale and clay, gray sand and silt, mostly carbonaceous and noncalcareous of a more continental origin than overlying beds.	Undeveloped supplies along the crest of the Wiggins-Lucedale anticline in the northern part of the area. The remainder of the formation contains brackish or salt water
	Catahoula Sandstone [illegible]	[illegible]	Shale, sandy shale, sand, clay and silt, and gravelly sands containing black chert.	The uppermost Catahoula sandstone contains fresh water on the crest of the Wiggins-Lucedale anticline, according to electrical logs of oil prospect wells [illegible]

Figure 10.—McCreas Bluff W.J., on the west bank Pascagoula formation

PLIOCENE AND PLEISTOCENE SERIES

GRAHAM FERRY FORMATION

GENERAL FEATURES

The name Graham Ferry formation is given to a series of deltaic sediments above the Pascagoula formation and below the Citronelle formation. The stratigraphic relationship to the overlying Citronelle

Figure 13.—Type section of Graham Ferry formation exposed in bluff beneath power line, west bank Pascagoula River (Locality R, near center of irregular Sec. 38, T. 5 S., R. 7 W.), Jackson County. View toward northwest from an altitude of 1,500 feet.

is disconformable, the relationship to the underlying Pascagoula not clear; but the unit includes beds that contain fossils of both Pliocene and Pleistocene age, according to Julia Gardner of the U. S. Geological Survey. Exposures extend north from the coastal pine meadows into the hills of southern Stone County and into a large part of Pearl River County, an area bounded on the northeast by Red Creek but not sufficiently distinctive to be separated from the Pascagoula terrain. The Graham Ferry formation ranges in thickness from 113 feet in eastern Jackson County to 975 feet at Gulfport. Doubtless the formation is much thicker farther west, but wells have not penetrated the entire thickness. The sediments of the Graham Ferry are heterogeneous and, like most deltaic formations, include both continental and marine beds. Continental and brackish water deposits predominate, although the type locality (Figures 12, 13) contains numerous marine fossils. Silty clay and shale, sand, silty sand, and gravelly sand are included. Most exposures of clay and shale, as well as argillaceous sand, contain carbonaceous fragments of plants, in several places associated with casts of mollusks, particularly *Barnea Costata*, and *Chione* sp. Two instructive exposures on the west bank of Pascagoula River in Jackson County are 1 mile apart and contain the same fossil bed near the top. The northern of these is locally known as Rice Bluff and is 1 mile downstream from White's Camp (Figure 12).

SECTION AT RICE BLUFF, 1 MILE BELOW WHITES CAMP, WEST BANK OF PASCAGOULA RIVER (LOCALITY Q, NW. 1/4, NW. 1/4, IRREGULAR SEC. 38, T. 5 S., R. 7 W.), JACKSON COUNTY.

	Feet	Feet
Citronelle (?) formation		60
Sand, gravelly loose gray and tan; rises back from the cliff face	60	
Graham Ferry formation		51
Clay, dark carbonaceous; contains plant fragments; grades down into fine sand	5	
Sand, fine; much is leached but contains concretions and fossil casts in the upper part; *Pecten (Plagioctenium), Irradians lamarck?*, and numerous other bivalves	8	
Shale, carbonaceous silty; dark-gray fine sand; grades into large cross-bedding	8	
Sand, gray silty; a vertical face	5	
Sand, interbedded with laminated silts and clays; contains numerous magnetite grains and weathers gray and tan. Clay is dark-gray and unweathered	19	
Clay, massive gray, blue-gray; unweathered	6	

A mile farther downstream another section is exposed, where an elevated power line crosses Pascagoula River (Figure 13).

SECTION OF WEST BANK OF PASCAGOULA RIVER AT THE POWER LINE (LOCALITY R, NEAR CENTER OF IRREGULAR SEC. 38, T. 5 S., R. 7 W.), JACKSON COUNTY.

	Feet	Feet
Citronelle (?) formation		25.0
Sand, quartz and chert; seep springs at base	25.0	
Graham Ferry formation		19.0
Clay, gray and blue-gray; sluffs down the slope	5.0	
Sand, gray fine much leached; contains casts and molds of *Pecten (Plagioctenium), Irradians lamarck?, Pecten* sp., *Chione* sp., and other fossils	4.5	
Silt, clayey; weathers brown and yellow with circular and elliptical markings	3.5	
Sand, fine, and interbedded clay	2.0	
Clay, steel blue massive	4.0	
Landslip of clay and silt		19.8
Covered	4.3	
Clay and silt from above	12.5	
Covered; flat at flood plain	3.0	

Altitude of base of section 15 feet.

Midway between the two bluffs is an old river crossing locally known as Graham Ferry, the name used here for the clays, silts, and sands above the Pascagoula formation and below the terrace deposits.

A mile still farther south on the west bank of Pascagoula River (Locality R_1) 18 feet of medium sand somewhat coarser at the base overlies the blue clay and strikes northwest into it. The sand, which is cross-bedded and has a salt-and-pepper appearance, is probably an updip extension of one of the sands of the Graham Ferry formation which yields water copiously along the coast.

In Harrison County the Graham Ferry deposits may also be seen along the channel of Tchoutacabouffa River north of Biloxi. The sandy clay in the stream bed 5 miles north of Biloxi (Locality O, SE. 1/4, SE. 1/4, Sec. 33, T. 5 S., R. 9 W.) contains leaf fragments, molds of *Barnea costata* (Linnaeus), *Chione* sp., and other pelecypods. At a bridge across Saucier Creek (Locality N, SE. 1/4, SW. 1/4, Sec. 16, T. 5 S., R. 11 W.), 3 miles southeast of Saucier, molds of *Barnea costata, Chione* sp., *Corbula* sp., other pelycypods and a fish tooth were collected from 12 feet of clay of the Graham Ferry formation. Like the Tchoutacabouffa River, the Wolf River in western Harrison and eastern Hancock Counties flows over the Graham Ferry formation, but more than a few feet of the clays, clayey sands, and silty sands are seldom exposed. One locality (K, NW. 1/4, SE. 1/4, Sec. 5, T. 6 S., R. 13 W., Harrison County) contains coniferous leaves and *Barnea costata*.

Farther west in Harrison County clays and silts of the Graham Ferry formation are exposed along the stream beds and lower banks as at Big Biloxi Creek on U. S. Highway 49, 14 miles north of Gulfport.

SECTION AT BIG BILOXI BRIDGE ON U. S. HIGHWAY 49 (LOCALITY M, SE. 1/4, SE. 1/4, SEC. 31, T. 5 S., R. 11 W.), HARRISON COUNTY.

	Feet	Feet
Citronelle (?) formation	-	11-35
Sand, gravelly red-brown; cross-bedded to the south	3-10	
Clay and sand, mottled gray, tan, and purple; seemingly a weathered and reworked zone of the top of the Graham Ferry formation	8-25	
Graham Ferry formation		47
Clay and silt, gray and massive; contains scattered grains of quartz sand	40	
Shale and minor sand, interbedded blue and blue-gray; the shale contains plant fragments and molds of two pelecypods; 1/2 mile upstream at Big Biloxi Park, these beds are darker, well-bedded and carbonaceous. Small crystals of gypsum are common on the bedding planes	7	

In Hancock County the Graham Ferry formation, exposed in the vicinity of Kiln, is gray somewhat silty clay and minor fine gray sand. Along Bell Creek in the northeastern part of the county, and in the lower part of the formation, fetid black shale and silt, containing a few thin lenses (1 or 2 inches thick) of fine gray sand and numerous plant fragments and worm borings, grade upward into blue-gray clay and silty sand (Figure 14). About 50 feet of Graham Ferry strata are exposed above the stream bed and along the secondary road south of Sellers School (Locality J, NE. 1/4, SW. 1/4, Sec. 25, T. 5 S., R. 14 W.), Hancock County.

In Pearl River County bedded silty clays and sands are more common, although clay is predominant. Along the county road 3 miles south of Strahans Corner in the western part of the county (Locality I, SW. 1/4, Sec. 26, T. 3 S., R. 18 W.), the apparent dip of bedded silt is 15° south. At this place noncalcareous fucoid-like concretions are numerous. Sand considered to belong to the Graham Ferry formation is exposed in a bluff above Pearl River at the northwestern corner of the county.

Of the 39 species, identified by Cushman, of foraminifera from wells in the coastal area (Table 2) all are from the Graham Ferry formation except possibly those from below 1,000 feet in Harrison County well 160 and from below 790 feet in Jackson County well 62; 15 are common both to the Caloosahatchee marl (Pliocene of Florida) and Recent West Indian faunas.[25] Also included are 5 species which W. S. Cole describes from Pleistocene and Pliocene deposits in

Figure 14.—Nonmarine shale and silt of the Graham Ferry formation in the bank of Bell Creek (Locality J, NE. 1/4, SW. 1/4, Sec. 25, T. 5 S., R. 14 W.), Hancock County.

Florida; namely, *Elphidium poeyanum*, *Rotalia beccarii* var. *parkinsoniana*, *Discorbis floridana* (very rare at one Florida locality), *Quinqueloculina lamarckiana*, and *Angulogerina occidentalis*. Howe and R. O. Vernon[26] have listed 16 species of foraminifera from Holmes and Washington Counties, Florida, which are given here and which are assigned to the Choctawhatchee (upper and middle Miocene) and the Alum Bluff (middle and lower Miocene) by Vernon. These species are *Angulogerina occidentalis*, *Asterigerina carinata*, *Buliminella curta*, *Buliminella elegantissima*, *Cibicides concentricus*, *Discorbis floridana*, *Elphidium advenum*, *Elphidium incertum*, *Elphidium*

TABLE 2

FORAMINIFERA FROM WELL CUTTINGS IN HARRISON AND JACKSON COUNTIES AND NEARBY ISLANDS
DEPTH INTERVALS OF SAMPLES CONTAINING FOSSILS IN FEET BELOW WELL COLLARS

LOCATION OR OWNER COUNTY WELL NUMBER	Cat Island Harrison 199	U. S. Naval Depot 2 Harrison 161	Biloxi Harrison 115	Lamey Jackson 14	Magnolia Park Jackson 75	Moss Point Jackson 62	Pascagoula Jackson 107	Horn Island Jackson 112	Horn Island Jackson 113
Angulogerina occidentalis								47– 69	44– 68
Asterigerina carinata								47– 90	
Bolivina pulchella var. primitiva								24– 90	28– 44
Bolivina rhomboidalis								47– 69	
Bolivina sp.	42–638				70– 80				
Buliminella cf. curta	638–661								
Buliminella curta	117–752								
Buliminella elegantissima	93–706		900– 920		90–140			24– 90	44–422
Cibicides americanus	117–417		540– 700						
Cibicides concentricus	42–661		20– 860		60–230				90–665
Cibicides cf. pseudoungerianus	136–160								
Cibicides pseudoungerianus			540– 560						
Discorbis floridana								47– 69	
Discorbis sp.					40– 50				
Elphidium advenum			160– 440						
Elphidium cf. gunteri			320– 400						
Elphidium cf. poeyanum	685–706		340–1040			36– 87			
Elphidium gunteri								111–289	55– 65
Elphidium gunteri var. galvestonense	42–136				80–130				
Elphidium incertum		1006–1288	460–1040					111–301	
Elphidium incertum var. mexicana?	266–460		160– 180		40–150				
Elphidium poeyanum			20– 580						
Elphidium sp.	616–861	567–1288	20–1225	130– 240	30–440		382–408		
Entosolenia orbignyana							282–292		
Epistomides sp.	638–661								
Globigerina bulloides	731–752				80– 90				
Guttulina pulchella	460–482							154–644	
Guttulina sp.	436–460								
Gyroidina sp.					220–230				
Loxostomum mayori?									641–663
Massilina sp.			800– 820						
Nonion depressula var. matagordana	42–200								
Nonionella auris								24– 47	
Nonionella sp.	222–706								
Quinqueloculina costata	222–244								
Quinqueloculina cf. lamarckiana	93–117		360– 380						
Quinqueloculina lamarckiana	222–752		100– 140						
Quinqueloculina seminula			160– 520						
Quinqueloculina [illegible]	[illegible]–661		60– 900						
[illegible]								47– 69	
Rotalia beccarii	[illegible]		120– 150					24– 90	
Rotalia beccarii var. parkinsoniana		1028–1288	200–1120		[illegible]	[illegible]		154–751	
Rotalia beccarii var. tepida	42–136				50–150				44–775
Rotalia? Rotalia sp.		567– 580	280– 300		[illegible]				
Textularia [illegible]			460–1060	130– 240					
Textularia [illegible]	[illegible]		1020–1040					[illegible]	
[illegible]	[illegible]		[illegible]					[illegible]	

poeyanum, *Quinqueloculina costata*, *Quinqueloculina lamarckiana*, *Quinqueloculina seminula*, *Rotalia beccarii* var. *tepida*, *Textularia gramen*, *Textularia mayori*, and *Triloculina oblonga*. Cole[27] lists seven of these species, among others, from a water well at Port St. Joe, Gulf County, Florida, within the depth interval 130 to 145 feet and assigns the interval to the Pliocene.

The species of foraminifera found in wells along the coast of Mississippi Sound and on the islands (Table 2) range in age from Miocene to Recent. Apparently none are diagnostic of any epoch. The same species of foraminifera which R. C. Bridges[28] assigned to the Pleistocene and which came from a brackish and marine fauna in wells in Livingston Parish, Louisiana, are also present in the samples from south Mississippi. Publication of specific determinations of other fossils from Bridges' samples would be especially valuable in view of the recent tendency of some authors working in Louisiana to describe all deposits above the Miocene as of Quaternary age[29, 30], although Howe and McGuirt[31] have been more cautious in describing a "deep-water fauna" within the Mississippi delta and from the depth interval 1,030 to 1,074 feet in Humble Oil Company's Cockrell-Moran No. 11 well (T. 20 S., R. 26 E., Lake Washington Dome, Plaquemines Parish, Louisiana), as Pleistocene or Pliocene, leaving as a possibility that it may be an off-shore assemblage of "some horizon which carries littoral foraminifera in areas farther north." Their list of 61 species from this well includes 10 of those given here from south Mississippi.

Miss Gardner briefly examined mollusks from cuttings in wells drilled to 819 and 836 feet on Horn Island and writes as follows:

"The species that I have been able to determine are Pleistocene or Recent forms. Many, though I think not all of them, have been recognized in Pliocene faunas. *Rangia johnsoni* is uncommonly well characterized, and I think I should have caught it, if it were present. The Pliocene to Recent *Rangia cuneata* is present in a number of samples."

Cushman comments on the foraminifera from cuttings at the Gulfport U. S. Naval Depot 2 (Table 2) as follows:

"The specimens are few and not too well preserved and . . . have only two species, *Elphidium incertum* which occurs in a number of samples, and *Rotalia beccarii* var. *parkinsoniana*, in all samples from 1,028 to 1,288 feet. Cole gives the latter as common in the Pliocene of Florida and rare in the Pleistocene. *Elphidium incertum* is given as abundant in the Pleistocene and common in the Pliocene."[31]

The presence of the hornblende assemblage of W. M. Cogen[32] in many of the deeper cuttings is probably not diagnostic, but he shows the hornblende zone above the top of the Miocene in the Continental Oil Company et al O. C. Hebert No. 1, Vermilion Parish, Louisiana, and through 2,550 feet of Pliocene in the Shell Petroleum Corporation's B. C. Hebert et al No. 1, Vermilion Parish, Louisiana. He states further that R. D. Russell's[33] description of the heavy-mineral assemblage carried by the Mississippi River closely resembles the subsurface hornblende assemblage, and the heavy-mineral assemblage from Recent deltaic sediments in St. Bernard and Plaquemines Parishes contains significant quantities of hornblende as well as all the other minerals of Cogen's hornblende zone.[34]

Thus, it would appear that the base of the hornblende zone might have correlative value but not the top—unless there is a non-hornblende zone somewhere beneath the subdeltas described by C. F. Dohm and above Cogen's zone. The cursory examination of rotary cuttings from the Mississippi coastal area did not show such a break, but much more work needs to be done.

HYDROLOGY

More than one half the artesian wells on the coastal area derive water from the coarser clastic beds of the Graham Ferry formation, especially from the basal sands and gravels. This aquifer of sands and gravels has produced more water than any other, and has borne the brunt of increased pumpage for war needs. In 1939 the natural pressure of the basal Graham Ferry raised water in wells a measured maximum of 70 feet above mean sea level at Bay St. Louis, 58 feet at Pass Christian, and 48 feet in western Biloxi, a gradient to the east except around Gulfport, where a local depression reversed the slope. In Biloxi, the piezometric surface declined approximately from 48 feet to 33 feet and toward the east continued downward to 20 feet below sea level at Moss Point. At the present time it stands 49 feet above the sea level on Horn Island. Thus an average overall gradient to the east of 1 3/4 feet per mile is suggested, accompanied by little movement of the water in a southeasterly direction along a line from Pass Christian to Horn Island. Along a line north through Gulfport the piezometric surface was approximately 20 feet at Cat Island and 58 feet near Lyman, a gradient of 2 feet per mile to the south. The altitude of the recharge area suggests that the initial shape of the piezometric surface was in general similar to its present shape, except for a present general decline of 20 to 30 feet in the areas of greatest production along the beach. Local cones of depression resulting from heavy pumpage have exceeded these figures, and the extension of the cones at the present (1944) rate of pumping will doubtlessly cause more widespread lowering.

The general magnitude of the coefficients of transmissibility and storage of the aquifer at Keesler Field, Biloxi, was determined by computations based on water-level measurements and pumpage data.

Calculations from the recovery of water level in three of the wells at Keesler Field indicate a coefficient of transmissibility of about 22,000 gallons per day per foot—coefficient of transmissibility being defined as the volume of water that will move in unit time through a vertical strip of the aquifer of unit width under a hydraulic gradient of 100 percent; and further calculations indicate a coefficient of storage of approximately 0.006—coefficient of storage being defined as the volume of water discharged from each vertical prism of the aquifer of unit cross-sectional area as the water level falls one unit of distance. The coefficient of transmissibility is considerably lower than the average value of the coefficient determined at Camp Shelby[35, 36] and Camp Van Dorn. This condition may be explained in part by the fact that the sand beds at both Camp Shelby and Camp Van Dorn are thicker than those developed at Keesler Field and in part by the fact that the sands from Camp Shelby and Camp Van Dorn are more permeable than those of the Graham Ferry formation near Keesler Field as determined in the laboratory.

No sand or gravel is found at the surface at a place where a reasonable upward projection of the dip of the basal sands of the Graham Ferry formation would indicate they should outcrop. Thus it would appear that at most places these sands feather out updip and are overlapped by younger beds of shale or clay. However at some places recharge may take place by percolation downward through more recent sand or gravel which fills channels cut through the clays overlying the Graham Ferry aquifer, or by means of some other hydrologic connection with meteoritic waters which remain as yet undiscovered.

Regardless of the fact that from early spring 1943 to early spring 1944 approximately a billion gallons of water had been removed from the basal sands of the Graham Ferry formation by the Keesler Field pumps alone, water levels in the wells during periods of like pumping rates were comparable.

Additional investigations are needed to determine the ultimate yield of this aquifer, to calculate the coefficients of transmissibility and storage at more locations in the area, and, finally, to evaluate "boundary conditions" such as the maximum rate at which water is available for recharge from sources outside the aquifer. These factors are not constant as even a cursory examination of the geology will show. The solution of these problems will depend on pumping tests at numerous points, on test drilling, on more intensive studies of the recharge areas, and on a mathematical treatment commensurate with the geological conditions.

PLEISTOCENE SERIES

CITRONELLE FORMATION

GENERAL FEATURES

The sand, sandy gravel, gravel, clay, and clayey gravel of the Citronelle formation cap several ridges in the long leaf pine hills and are the oldest recognizable terrace deposit in the area. The ridges have a radiating pattern fanning out from the northwest, an outline suggesting that the formation is erosion remnants of distributary channel deposits of some great Pleistocene stream. The beveled clays and silts of the Pascagoula and Graham Ferry formations on which the Citronelle disconformably rests are crudely benched at altitudes of 190 to 210 feet and 250 to 270 feet in Pearl River, Stone, and George Counties, and in the extreme northern portions of Hancock, Harrison, and Jackson Counties. Farther south in the coastal portion fingers of sand and gravel of the Citronelle formation continue down beneath younger sediments, where they have been reworked in part and locally, as east of the Pascagoula, entirely eroded and redeposited into lower and younger formations. Gravels encountered in wells along the coast in southern Hancock County are assigned to the

Citronelle; and between Gulfport and Biloxi, Harrison County, and in the vicinity of Pascagoula, Jackson County, somewhat questionably so.

The thickness of the Citronelle formation ranges from a thin mantle to a known maximum of about 160 feet. On the ridge crests

Figure 15.—Big Biloxi Creek flowing across clay of the Graham Ferry formation where conditions are not favorable for recharge to the artesian sands (Locality L, SE. 1/4, NW. 1/4, Sec. 22, T. 5 S., R. 12 W.), Harrison County.

maximum thickness is about 100 feet, but in southwestern Hancock County the buried extension reaches the larger figure and may exceed it.

Perhaps the most typical feature of the Citronelle formation is the brick-red sand forming the cores of ridge crests and extending down to altitudes as low as 50 feet on the projections of the ridges. The sand is highly oxidized, usually massive and sprinkled with coarse grains of milky quartz and brown chert. The well-drained uplands of the Citronelle support a typical oxidized sandy loam series, locally silty where original depressions and subsurface drainage have caused accumulation of fine material. According to C. F. Marbut,[37] these soils are like the sandy soils of the Atlantic coastal plain south of North Carolina, except that much more fine and very fine sand is present. Much of the upper sandy part assigned to the Citronelle seems to be wind-blown, and, although younger than the Citronelle, it is mapped with it as part of the lithologic unit. The blow-outs and active dune areas can be separated, however. Gravel, both

Figure 16.—Gravel of the Citronelle formation resting on weathered clay of the Graham Ferry or the Pascagoula formation at an elevation of 273 feet (Locality G, NE. 1/4, NE. 1/4, Sec. 26, T. 2 S., R. 15 W.), Pearl River County.

sandy and clayey, is common in the lower part of the formation (Figure 16); the walls of numerous road-metal pits expose large-scale fluvial cross-bedding in the coarse clastic material and in local thin beds of gray clay. Pockets and stringers of clay extend throughout the lower gravelly portion. The gravel is mostly brown chert and quartz so common on the upland throughout Mississippi.

HYDROLOGY

Numerous small farm wells and springs in the long leaf pine hills derive water from the Citronelle formation which is perennially saturated in the lower few feet. Its limited distribution prevents large development along the coast although transmissibility is high where the gravel beds extend below the coastal meadows. Some of the early wells in Hancock County derived water from the Citronelle under natural pressure of about 20 feet above the land, but subjacent greater pressures early led to deeper drilling. An attempt to produce 500 gallons a minute from gravel above a depth of 155 feet at Moss Point, Jackson County, in 1927 resulted in salt-water encroachment and the well had to be abandoned. Conditions would seem somewhat more favorable in Hancock County, because of greater fresh-water pressure but intensive pumping would, by analogy, eventually cause salt-water encroachment. Water in the Citronelle is more important in the hinterland because it serves as an auxiliary reservoir for the underlying formations and probably contributes pressure to the flowing wells along the coast which derive water from the Graham Ferry and Pascagoula formations.

HIGH TERRACE DEPOSITS

Alluvial deposits which can be mapped separately from the Citronelle formation are shown on the geologic map in the vicinity of Pearl and Pascagoula Rivers. These local deposits are younger than the Citronelle, being reworked sand and gravel largely derived from the older formation which they resemble lithologically. The estimated maximum thickness near the Pearl River is 100 feet; east of the Pascagoula River, 50 feet. An average thickness noted in wells east of the Pascagoula River, where the material splays out to the southeast, is about 30 feet. The High terrace deposits differ from the Citronelle in that the chert pebbles seem less abundant and the quartz more abundant, and in that they are less indurated, although the basal portion is cemented at Locality A (Figure 17). Small supplies of water for farm and domestic purposes are obtained from the High terrace deposits. However, the limited area covered by them, together with their elevated position which facilitates natural drainage, reduces their importance as ground-water reservoirs.

LOW TERRACE DEPOSITS

The Low terrace deposits, younger than the High terrace deposits, include lower stream alluvium east of the Pascagoula River as well as a strip of deposits comprising beach ridges which extend across the area west of the Pascagoula River. The deposits are thin; a thickness of 20 feet in the Pascagoula strath area is maximum along distributary ridges or natural levees, but most of this strath area is underlain by 6 feet or less of Low terrace alluvium. The belt of Low terrace deposits west of the Pascagoula River is somewhat thicker, probably averaging 15 feet. The Low terrace deposits are mostly sand (Figure 18). Where the water table is high and swampy organic debris is present, the sand is gray; elsewhere it is tan or yellow. Locally the deposits contain pebbles and grains of quartz

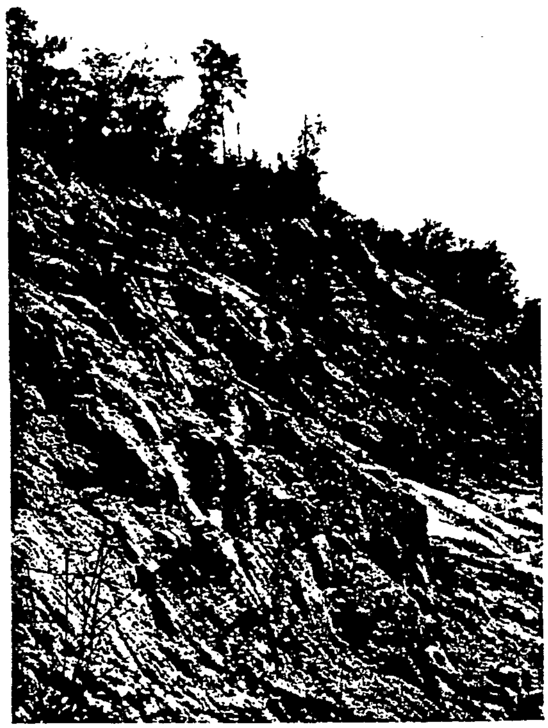


Figure 17.—Ninety feet of sand of the High terrace deposits (Locality A, SW. 1/4, Sec 5, T. 1 S., R. 17 W.), northwestern corner of Pearl River County.

and brown chert. Along the lower elge of the outcrops west of Pascagoula River the tan sand is locally consolidated into a friable sandstone and in Hancock County the outcrops are gray mottled clay and sand.

A few small wells derive water from the Low terrace deposits under water-table conditions. The sands will transmit water, but the small areal extent and thinness of the deposits show that large quantities of water are not present.

A section of Low terrace deposits is exposed on the south bank of Red Creek at Red Bluff.

Figure 18.—Massive sand of the Low terrace deposits beneath sandy loam exposed on west bank of the Pascagoula River. The bluff is 24 feet high, composed of white sand in the lower 8 feet that grades up into clay and 10 feet of weathered clayey brown sand beneath the tree (Locality T, West center Sec. 3, T. 7 S., R. 6 W.), Jackson County.

SECTION AT RED BLUFF (LOCALITY P, SE. 1/4. SE. 1/4. SEC. 16, T. 4 S., R. 7 W.). JACKSON COUNTY. ALTITUDE AT TOP OF BLUFF 46 FEET.

	Feet	Feet
Low terrace deposits		30
Sand, clayey and sandy loam. weathers brown in a vertical face; Indian potsherds near top	10	
Sand, laminated white: yellow and gray-yellow clayey sand	8	
Sand, fine white: somewhat coarser near the base	12	

PAMLICO SAND

The Pamlico sand underlies the Pamlico plain (coastal pine meadows) along the north shore of the Mississippi Sound. Much of the outer edge of the Pamlico sand is capped by Recent beach and dune deposits from which it cannot readily be separated, and the formation, as mapped, also includes fluvial deposits of Pearl and Pascagoula Rivers near their mouths which merge with the marine deposits along the shore.

The Pamlico surface is well marked across the State, and many beach features are preserved. North of Biloxi mollusk-bored pebbles from an elevated beach at a height of 42 feet (Figure 3) may have been deposited when the sea stood at the Penholoway level, or they may have been cast up by the Pamlico sea which left fossiliferous marine deposits. Douglas Johnson gives 20 feet as the maximum height at which beach ridges might be formed above the sea. A somewhat smaller height might be expected along the Gulf Coast where tides are small and off-shore depths are shallow, until it is recalled that the area is lashed by hurricanes, which could leave a ridge at a height considerably above the littoral.

H. G. Richards[38] cites the U. S. Geological Survey for the authority that Pleistocene fossils have been found at depths of 30 and 50 feet midway between Gulfport and Biloxi, Harrison County, at 30 to 64 feet at Long Beach west of Gulfport, Harrison County, and at 70 to 95 feet at Waveland, Hancock County, depth intervals within the Pamlico sediments.

The thickness of the marine and estuarine deposits is small and variable—1 to 75 feet, according to correlations on drillers' logs. Most of the material is gray and tan sand, although clay and silt, resulting from lagoonal depositions, are exposed in the northern and lower portions of the Pamlico plain, as well as some beach shingle in the seaward portion.

A good exposure is on the southeast bank of the Wolf River (Locality X, NE. 1/4, NE. 1/4, Sec. 5, T. 8 S., R. 12 W.), Harrison County, 3 miles north of the Pass Christian-Long Beach boundary.

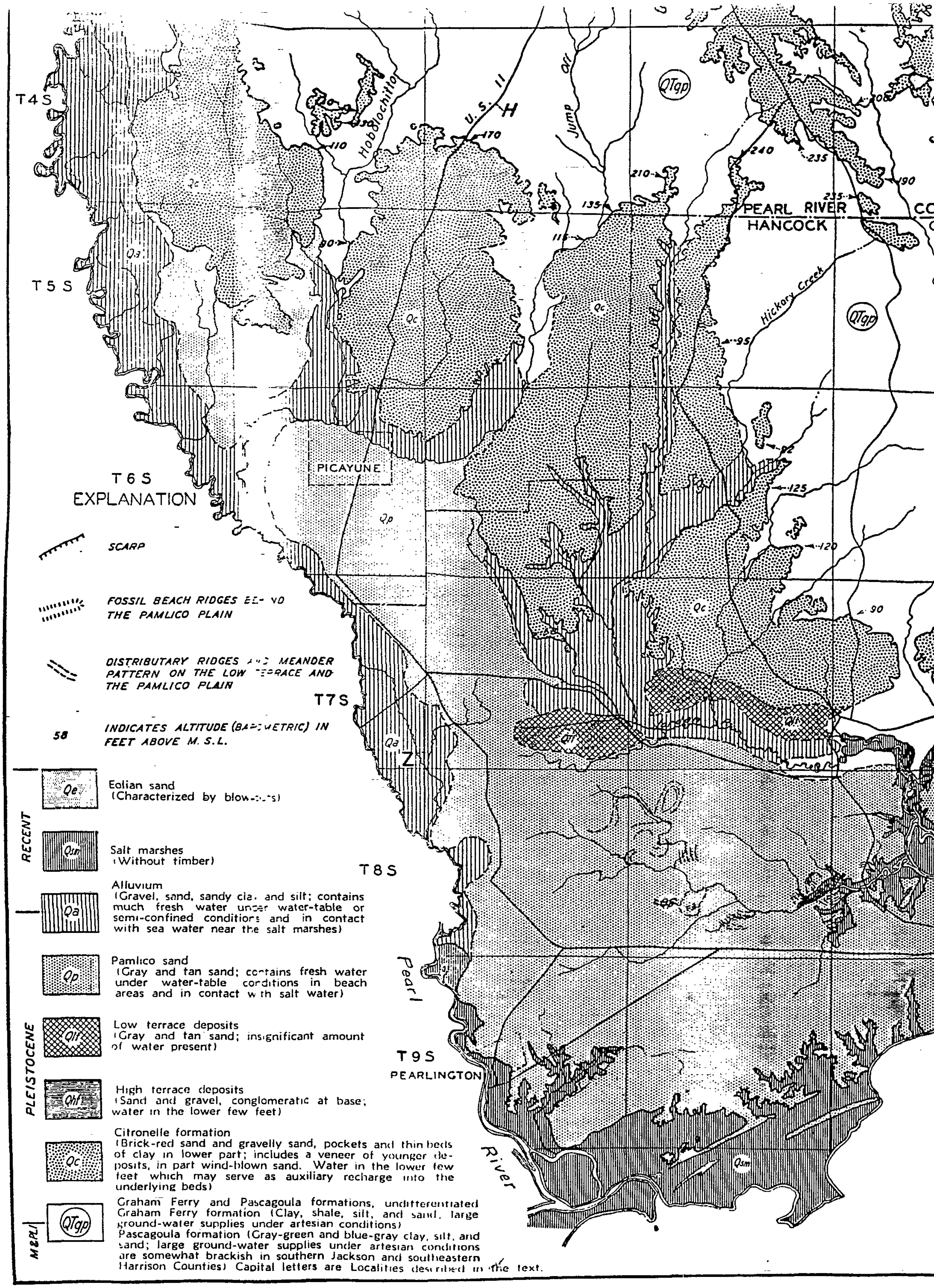
SECTION OF THE SOUTHEAST BANK OF WOLF RIVER. ALTITUDE AT TOP OF THE BANK 25 FEET.

	Feet	Feet
Pamlico sand		15
Sand and weathered chert pebbles; grades upward into sandy loam	3	
Clay, lenticularly bedded gray	2	
Sand, yellow clayey; contains pebbles of weathered chert	10	

Some small water wells back from the shore have been dug into the Pamlico sediments, but the porous and unconsolidated sands have furnished a reservoir for sewage in the thickly populated areas, thus permitting pollution of the water of the Pamlico until it is unwholesome and locally dangerous for domestic use. However, much water for industrial uses such as air-conditioning could with care be pumped from the Pamlico. The temperature of the water from the Pamlico sand is uniformly about 70 degrees Fahrenheit throughout the year. Such water would probably become increasingly salty, especially if withdrawn in large amounts near the tidal bays.

ALLUVIUM

Gorges cut by the trunk streams, Pearl, Pascagoula, and Escatawpa, presumably during the last or Wisconsin glacial epoch, have been filling up since the close of the epoch. The bulk of the lower part of the alluvium is sand and gravel, similar to contemporaneous deposits along the Mississippi River. At the present time clay and silt are accumulating on the overflow portions of the Pascagoula valley; and much organic debris, including sawdust, is accumulating along the tidal marshes. Exposures of sand bars and levees along the banks of the Pascagoula River in George County show gray fetid and sticky clay, locally layered with partly decayed roots and twigs. Sand and gravel are abundant in the alluvium of Red Creek, Wolf River, and Pearl River, as well as along many smaller tributaries. Along Red Creek, whose course has been much alluviated compared to Black Creek, sand and gravel banks contain pebbles as large as two inches across composed of white, gray, tan, and black chert and bull quartz. One exposure in eastern Stone County is along Red Creek.


T4S
T5S
T6S
T7S
T8S
T9S
U.S. 11
H
Jump Off
Hobolochitto
Hickory Creek
PEARL RIVER
HANCOCK
PICAYUNE
PEARLINGTON
Pearl River
Z
QTgp
Qc
Qa
Qp
Qlt
Qsm
110
170
210
135
115
80
240
235
190
95
92
125
120
90
EXPLANATION
SCARP
FOSSIL BEACH RIDGES BE- VD THE PAMLICO PLAIN
DISTRIBUTARY RIDGES A- MEANDER PATTERN ON THE LOW TERRACE AND THE PAMLICO PLAIN
58 INDICATES ALTITUDE (BA-METRIC) IN FEET ABOVE M. S. L.
RECENT
Qe Eolian sand (Characterized by blow-outs)
Qsm Salt marshes (Without timber)
Qa Alluvium (Gravel, sand, sandy cla. and silt; contains much fresh water under water-table or semi-confined conditions and in contact with sea water near the salt marshes)
PLEISTOCENE
Qp Pamlico sand (Gray and tan sand; contains fresh water under water-table conditions in beach areas and in contact with salt water)
Qlt Low terrace deposits (Gray and tan sand; insignificant amount of water present)
Qhf High terrace deposits (Sand and gravel, conglomeratic at base; water in the lower few feet)
Qc Citronelle formation (Brick-red sand and gravelly sand, pockets and thin beds of clay in lower part; includes a veneer of younger deposits, in part wind-blown sand. Water in the lower few feet which may serve as auxiliary recharge into the underlying beds)
M&PLI
QTgp Graham Ferry and Pascagoula formations, undifferentiated
Graham Ferry formation (Clay, shale, silt, and sand, large ground-water supplies under artesian conditions)
Pascagoula formation (Gray-green and blue-gray clay, silt, and sand; large ground-water supplies under artesian conditions are somewhat brackish in southern Jackson and southeastern Harrison Counties) Capital letters are Localities described in the text.


GEORGE COUNTY
JACKSON COUNTY
STONE COUNTY
HARRISON COUNTY
HARRISON COUNTY
JACKSON COUNTY
QTgp
QTgp
Qc
Qlt
Qp
Qa
N
M
O
P
Q
W
V
T
U
Biloxi Creek
Tuxachanie Creek
BILOXI
OCEAN SPRINGS
DEER ISLAND
GULFPORT
ISSIPPI SOUND
SLAND
SHIP ISLAND
HORN ISLAND

Water Resources of the Pascagoula Area Mississippi

By EDWARD J. HARVEY, HAROLD G. GOLDEN, and H. G. JEFFERY

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1763

Prepared in cooperation with the Jackson County Board of Supervisors

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1965

Ref 19

cuttings from several places between 470 and 1,630 feet, and *Amphistegina* sp. at 2,368 feet, probably near the base of the Hattiesburg. The Hattiesburg probably begins above 1,600 feet and extends to almost 2,300 feet. A paleontological report by B. L. Smith (oral communication, 1961) shows that *Sorites* sp. occurs at a depth of 2,490 feet in this well. Akers and Drooger (1957, p. 666) and Puri (1953, p. 45) stated that *Sorites* sp. is found with *Archaias* sp. Thickness, of the Hattiesburg probably is at least 800 feet.

South of the Humble-Dantzler test the Hattiesburg is too deep to be considered as a source of fresh water. The complete thickness of the formation has not been prospected as a source of water, although the Lucedale wells probably are completed in the lower part of the formation.

Water from George County well C15 (table 21) is a sodium-bicarbonate type and similar to water in the Pascagoula Formation. Yields of wells C15 and C17 are reported to be about 500 gpm. Comparison of the logs of the wells with electrical logs of oil tests in other parts of George County indicates that water wells having similar yields can be made in the Hattiesburg Formation in other parts of the county and that a substantial supply of water is available from this source to meet future demands.

PASCAGOULA FORMATION

STRATIGRAPHY

The Pascagoula Formation was first named Pascagoula Clay by McGee (1891) because clay was so often found beneath the overlying gravel of the Citronelle Formation. In many places the contact with overlying terrace deposits or sand and gravel of the Citronelle is marked by the presence of green, dark blue, or gray clay beds of the Pascagoula. Occasionally sand of the Pascagoula, usually gray or dark blue and silty, occur below the contact. In the subsurface, several hundred feet of fine to coarse sand occurs in the section in lenses that cannot be traced far.

Brown and others (1944, p. 142–143), by interpreting the log of the Sea Coast Oil Hibbler 1 test well, in northwest Moss Point, placed the base of the Pascagoula at 1,800 feet and assigned 1,400 feet of sand and clay to the formation. In the Humble-Dantzler well, Brown placed the base of the Pascagoula at a depth of 1,600 feet, although he does not show in the log the presence of *Amphistegina*. Herrick found *Amphistegina* at 2,368 feet and placed the base of the Pascagoula Formation at 2,338 feet. The total thickness thus represented of more than 2,000 feet for the formation seems excessive. With the exception of the city wells (C15 and 17) at Lucedale in George County and an abandoned 1,800-foot well that produced hot salt water in Moss Point, all wells drilled below the Citronelle or Graham Ferry Formations are completed in the Pascagoula Formation.

No attempt has been made to divide the Pascagoula Formation because of the lenticularity of the deposits. Brown's interpretation (Brown and others, 1944) of the top of the formation and the one presented herein are in general agreement. However, the 500-foot sand at Ocean Springs, which Brown considered basal Graham Ferry, is probably in the Pascagoula Formation. The Pascagoula Formation dips to the south at about 40 feet per mile. *Rangia johnsoni* was found in well Q117 at Bayou Casotte at a depth of 990 feet and in well N66 at Ocean Springs at 995 feet. The finding of *Rangia johnsoni* in these wells indicates that the beds do not dip appreciably to the west and that the strike of the Pascagoula Formation is almost east-west, and the correlation of the 500-foot sand at Gautier and Ocean Springs further substantiates the east-west strike.

In the vicinity of Pascagoula, a pronounced change in lithology usually is apparent at the base of the sand of the Graham Ferry Formation, where hard green shale 200 to 300 feet thick underlies the sand. Several sands are fairly continuous in small areas. Probably the most extensive sand units are those at 500- and 800- foot depths at Ocean Springs. The 500-foot sand at Ocean Springs can be traced as far east as the western part of Pascagoula, where three flowing wells were completed in the unit. These are the only known flowing wells in Pascagoula in 1961; other wells, both deeper and shallower, ceased to flow before 1958. The sand has not been recognized in wells farther east, although sandy zones noted at approximately the 500-foot depth are probably equivalent.

The 500-foot sand consists of fine to coarse grains of quartz and granules of black polished chert and has a gray appearance owing to the large percentage of dark minerals. Granules of chert and quartz are more abundant near Ocean Springs than at Gautier. In Gautier and western Pascagoula, about 30 to 40 feet of sand in this interval was correlated with the sand farther west on the basis of lithology, stratigraphic position, water levels, and chemical composition of the water. At Ocean Springs, the 500-foot sand may vary in short distances from more than 100 feet of coarse sand to an equal thickness of sandy shale containing a few thin lenses of coarse sand.

The sand occurring at 800 feet at Ocean Springs is not as persistent as the 500-foot sand (pl. 10). Lithologically, the sands are similar. The 500- and 800-foot sands are distinguished from each other by the chemical character of their contained water. The 800-foot aquifer is not as extensively used as the shallower aquifer.

At Pascagoula and Gautier, sands occur at depths of 700 to 900 feet; they are probably equivalent to the 800-foot sand at Ocean

Springs, even though considerable difference exists in the quality of the water in the two areas and the chloride content is much higher at Pascagoula.

A sand occurring at a depth of 800 feet underlies Moss Point, but it apparently changes to a shaly section in the surrounding areas. Because of the dip of the beds, this sand is not considered equivalent to the 800-foot sand in Pascagoula.

In a small area in the eastern part of Pascagoula a bed of fine-grained sand occurs at depths ranging from 600 to 650 feet. It is similar to other sands of the Pascagoula Formation; but because of its lesser thickness and fine texture, it is not capable of yields as large as those of the 800-foot sand. As other wells are drilled, its areal extent will be better known.

Aquifers at depths of more than 1,000 feet have been utilized very little in George and Jackson Counties. Test wells have been drilled and a few water wells completed in sand 1,000 or more feet deep in the vicinity of Pascagoula. Owing to the lenticularity of these aquifers and to the higher chloride content usually prevailing in water from the deeper sand, development has been slight. In the Bayou Casotte area, three test wells drilled to depths of 1,000 to 1,100 feet failed to penetrate an aquifer. However, sufficient sand for the development of domestic or small industrial water supplies usually can be found, and a few wells have been drilled through as much as 80 feet of sand at depths exceeding 1,200 feet (Q34, K37, fig. 2). The mineral content of the water in well K37, on Bluff Creek, is exceptionally low for the Pascagoula area, and the chloride content is lower than that found in shallower wells. Most of the older wells, completed at depths of more than 1,000 feet, produced water having more than 500 ppm of chloride. Only two of these older wells are in use in 1961.

HYDROLOGY

The formations that show the greatest amount of areal decline in water level are usually the most heavily used. The deeper sands are pumped more heavily in the western part of Jackson County, but most of the ground water in the project area is derived from the Graham Ferry Formation at a depth less than 400 feet. Comparison of water-level measurements made in 1958–61 with the earliest measurements available for the 500- and 800-foot sands shows declines of 50 and 75 feet, respectively. In many places away from the centers of pumping, flowing wells still exist after 75 years of use. The artesian pressure of the 800-foot sand at Pascagoula and Moss Point has decreased about 75 feet since 1897; pumpage has increased from a few hundred gallons per day to 3 mgd between 1897 and 1958, and 10 percent of the available pressure has been used. If pumpage remains constant, water levels will become nearly stabilized, but increased pumpage will cause an additional decline in water levels.

The declines in water level are not only dependent on the amount of water pumped but are also affected by the transmissibility and storage coefficient of the aquifer. Three pumping tests on sands of the Pascagoula Formation in Jackson County indicated that transmissibilities range from 25,000 to 60,000 gpd per ft (fig. 24 and table 20). It is estimated that transmissibilities will equal 60,000 gpd per ft for the 500- and 800-foot sands at Ocean Springs.

Water levels in the 500-foot sand at Ocean Springs declined at the moderate rate of about 1 foot per year since 1919. Measurements made in 1919, 1939, and 1958 do not indicate an increased rate of decline in the past 20 years. Water levels are 10 feet lower in the center of Ocean Springs than in the area east of town (pl. 5; fig. 25). The contour map shows that ground water is moving from the outcrop area in northern Jackson County toward Ocean Springs and Gautier. The natural discharge area of the aquifer lies at some distance offshore. The use of water from this aquifer has not been large enough to cause wells to stop flowing except in the immediate vicinity of Ocean Springs. The contours in Ocean Springs show the effect of municipal pumpage and withdrawals in the Biloxi area to the west.

Where the piezometric surface of an aquifer (fig. 39) stands above the ground surface, a flowing well can be obtained. The map outlining areas where flowing wells can be constructed was based on locations of the deepest known wells in the two counties yielding fresh water (pl. 10). The piezometric surface slopes toward the coast, and the water in the deeper aquifers normally will stand under natural conditions at a higher level than the water in the shallower aquifers. The use of the aquifers along the coast has so altered the natural condition that the water in the 500-foot sand at Pascagoula, for example, stands at a little higher level than the water in the 800-foot sand.

Because of the lower chloride content of waer from wells in western Jackson County, more wells exceeding 1,000 feet in depth are in use in the vicinity of Ocean Springs and LaRue community than in the remainder of the area. Electrical logs of oil tests drilled in the northern parts of Jackson and George Counties show the presence of several thick, sand beds in the Pascagoula Formation. Sample cuttings from deep wells show that the sands in the northern area are generally very coarse and that each supply well should be capable of yielding several hundred gallons per minute. However, information on deep borings is lacking in much of Jackson County, and continuity of the deeper sands is not well known.

735-727 O—64——7

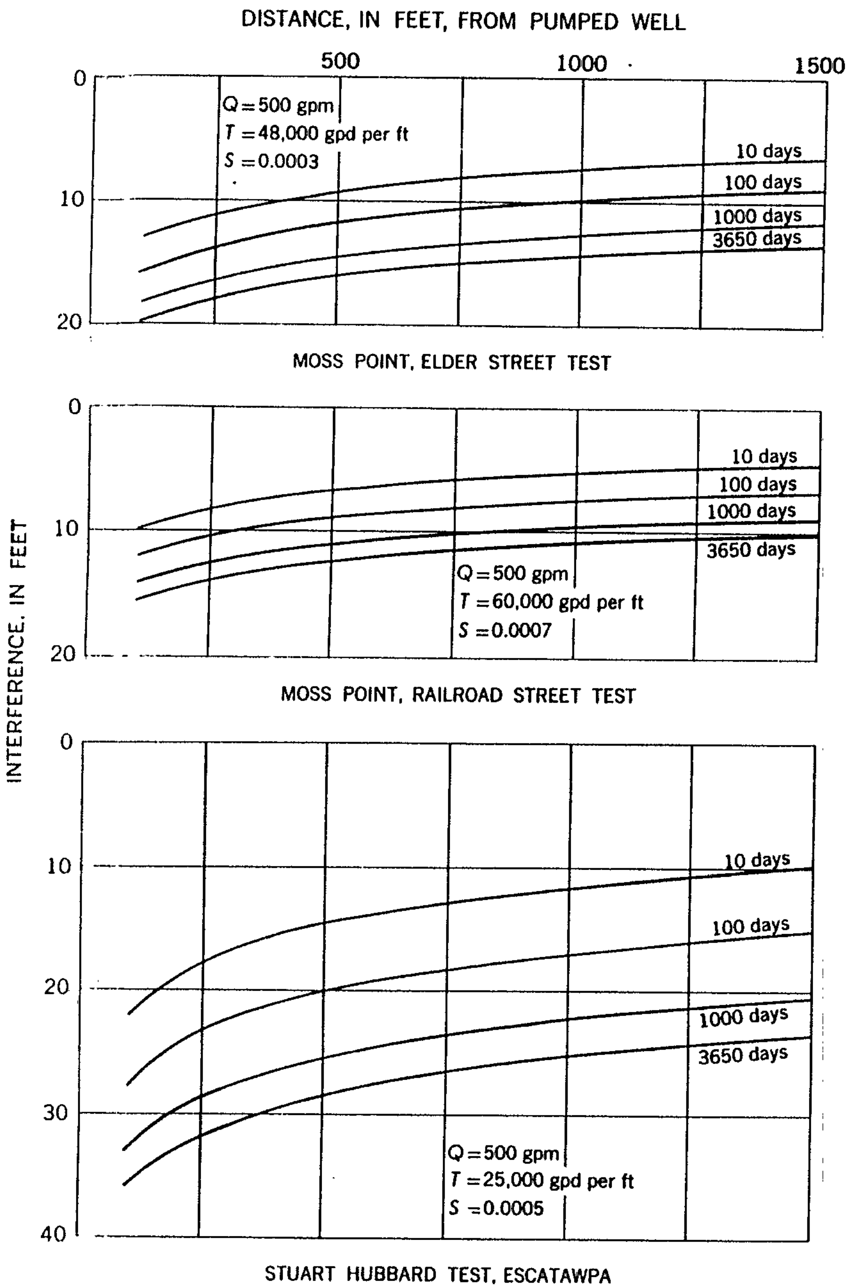


FIGURE 24.—Yield-drawdown relationship in aquifers of the Pascagoula Formation.

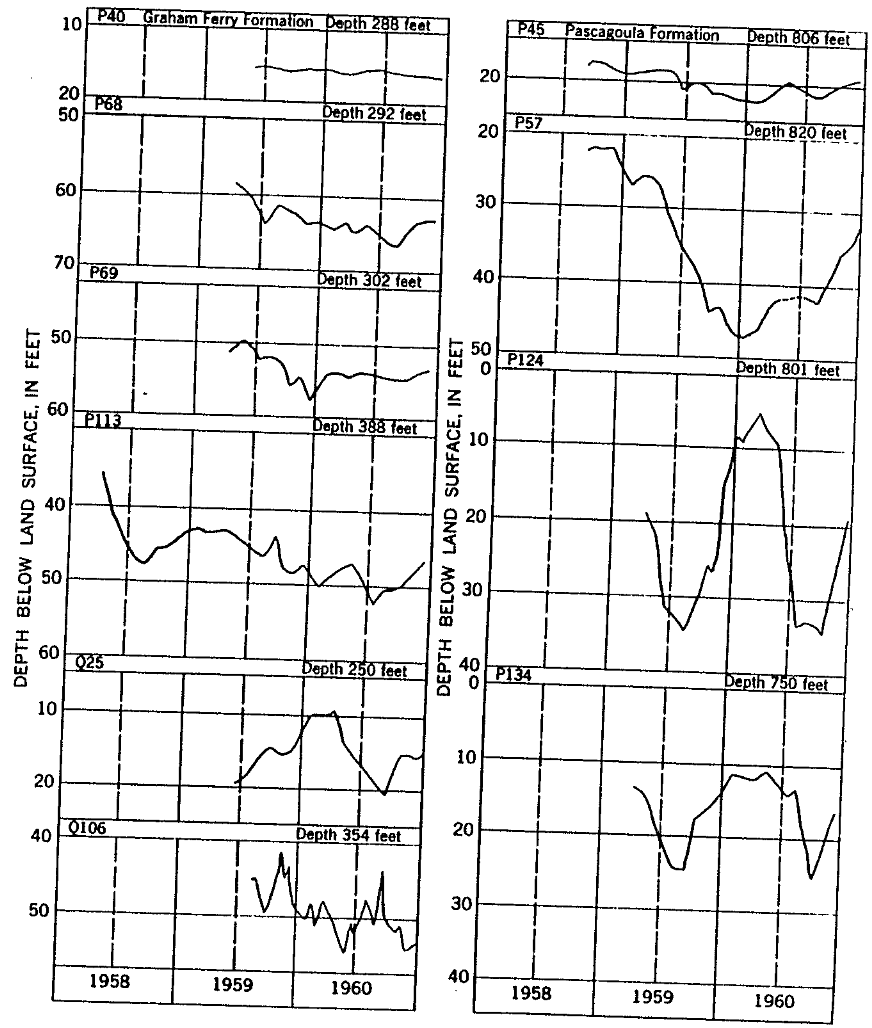


FIGURE 25.—Hydrographs of wells in the Pascagoula and Graham Ferry Formations.

CHEMICAL QUALITY

Water from the three principal water-bearing units of the Pascagoula Formation is soft and is usually colored in varying degrees. Basically, it is of the sodium bicarbonate type, having considerable quantities of chloride in water from the 800- and the 1,200-foot sands. Locally, the percentage of chloride may be sufficient to change the classification of the water to a sodium chloride type. The dissolved-solids content of water from this formation is variable; generally, it increases with depth and with distance from the outcrop area.

TABLE 20.—*Pumping test data for aquifers in vicinity of Pascagoula, Miss.*

[See figures 24, 27, and 30 for time-distance-drawdown relationships]

Owner	Formation	Thickness of sand (ft)	Coefficient of transmissibility (gpd per ft)	Coefficient of permeability (gpd per sq ft)	Coefficient of storage	Specific capacity (gpm per ft of drawdown)	Specific capacity of typical wells (gpm per ft of drawdown)	Typical yields (gpm)	Remarks
Coastal Chemical Co.	Graham Ferry.	60	23,000	380	0.0002	13	7-16	300-500	Average of two tests.
H. K. Porter Co.	do	50	14,000	280	.002	2	7-16	300-500	Erratic development of aquifer in this area. Sand at pumped well poorly developed.
Quaker Oats Co.	do	100	54,000	540	.0005	----	7-16	300-500	
City of Moss Point:									
Elder Street	Pascagoula	56	48,000	860	.0003	13	10-20	500	
Railroad Street	do	80	60,000	750	.0007	18	10-20	500	Flowing wells.
Stuart Hubbard	do	----	25,000	----	.0005	10	----	----	
County Board of Supervisors	Citronelle	80	45,000	560	.0006	11	----	100-500	Average values of transmissibility and storage from four observation wells.

The observed maximum and minimum concentrations of the predominant constituents and dissolved solids are shown in the following table.

Chemical analyses, in parts per million, of water from the Pascagoula Formation

Constituent	Concentration	
	Maximum	Minimum
Sodium (Na)	619	16
Alkalinity (HCO_3, CO_3)	760	16
Chloride (Cl)	756	2
Dissolved solids	1,640	112

The individual concentrations of calcium, magnesium, and sulfate seldom exceeded 10 ppm. Calcium and magnesium usually were less than 5 ppm. The fluoride content of 1.9 and 2.4 ppm in wells P21 and Q34 exceeded the upper limit of 1.5 ppm for potable waters recommended by the U.S. Public Health Service. The results of analyses of water from wells in George and Jackson Counties are shown in tables 21 and 22. A few of these analyses are shown graphically in plates 9 and 10. These figures also illustrate the variability of chloride in the area. The higher concentrations of chloride, and an equivalent quantity of sodium, are presumed to be a result of incomplete flushing of sea water that was trapped in the Pascagoula sediments when they were deposited. The high sodium bicarbonate content probably results from a series of reactions involving calcium carbonate, base-exchange minerals, and carbonaceous material. Foster (1950) states that only in a formation containing these three materials, and, usually, only at some depth in the formation, may water of a high sodium bicarbonate content be expected. Conversely, the occurrence of such water may be taken as indicative of the presence of these three materials in a formation.

In the Ocean Springs area the chloride content of water from the 500-foot sand usually was less than 20 ppm. The chloride content of water from the 800-foot sand ranged from 34 to 151 ppm, and in water from the 1,200-foot sand it ranged from 340 to 762 ppm.

The difference in chloride content in waters from the 800- and 1,200 foot sands in the Pascagoula-Moss Point area is not as distinct as that found in the Ocean Springs area. In the Pascagoula-Moss Point area the chloride content of water from the 800-foot sand ranged from 57 to 300 ppm, and from the 1,200-foot sand it ranged from 175 to 545 ppm. Considerable overlapping occurs in the maximum values for chloride in the 800-foot sand and in the minimum values for chloride in the 1,200-foot sand in this area, and chloride values that approach the maximum of 300 ppm are found at various depths within the 800-foot sand unit. Such factors as environment of deposition, continuity of the aquifer, permeability, and distance to the outcrop are complexly related, and together they explain the variation in chemical quality of the water.

An increase in chloride content of water from a coastal aquifer usually is considered indicative of salt-water intrusion. Two wells (P124 and P134) were sampled periodically to monitor changes in the chloride content of water from the Pascagoula Formation. Although these analyses (see table 22) show a variation in chloride content, they do not indicate salt-water intrusion in the aquifer.

The sands of the Pascagoula Formation at various depths in the Pascagoula-Moss Point area are lenticular. An examination of sample cuttings and the results of pumping tests indicate that the permeability of the sands varies from low to moderately high. These characteristics affect the flushing of salt water from the aquifers because low permeabilities hinder the free movement of water. The variability of chloride with depth and the lack of distinction in chloride content between the 800- and 1200-foot sands in the area probably are a result of different rates of flushing of salt water from the sands. On the other hand, the 500- and 800-foot sands in the Ocean Springs area, although somewhat lenticular, are more continuous as a whole, and their flushing is therby facilitated to a greater degree than in the Pascagoula area. The generally lower chloride content of water in the Ocean Springs area in the 500-, 800-, and 1,200-foot sands contrasts with the higher chloride content in the aquifers at those depths in the Pascagoula area.

The Pascagoula Formation crops out in a large part of the upland surface west of Pascagoula River, and natural recharge to the sandy aquifers in the outcrop is direct. East of the river, where much of the upland surface is covered by a thick mantle of the Citronelle and terrace deposits, water available for recharge must pass through the thick surficial deposits before reaching the underlying Pascagoula Formation (pls. 3, 9). Rate and distance of movement of water through the aquifers to the coast are important factors in the mineralization of the water.

The depositional environment of the sand and surrounding clay beds, whether in a marine, brackish-water, or fresh-water environment, would influence the type of water available today. More thorough flushing would be needed to obtain potable water supplies from marine deposits than from continental deposits.

According to electrical logs of oil tests drilled in west-central Jackson County, the base of fresh-water sands is at depths ranging from 1,500 to 1,800 feet. The log of the C. A. Floto State of Mississippi 1 test drilled on Horn Island shows the presence of moderately fresh water at a depth of 1,500 feet. In Moss Point, a well drilled 1,807 feet deep

was sampled in 1956 and yielded water having a chloride content of 1,560 ppm. In Pascagoula, water containing 550 ppm of chloride was obtained at a depth of 1,600 feet. The deepest well south of the mainland (O47) for which an analysis is available is 1,140 feet deep and yields water having a chloride content of 135 ppm. The combination of electrical logs and water analyses for deep wells indicates that the lower limit of occurrence of fresh water ranges from a depth of 1,200 feet at the coast to 1,600 feet in central Jackson County. From the coast to Horn Island, the lower limit of occurrence of fresh water is almost level.

GRAHAM FERRY FORMATION

STRATIGRAPHY

The Graham Ferry Formation contains the aquifer most widely used and generally most consistently present in the vicinity of Pascagoula. The formation was named and described by Brown and others (1944) from exposures at a power-line crossing south of Graham Ferry near the center of the eastern half of sec. 38, T. 5 S., R. 7 W. The contact between the Graham Ferry and the Pascagoula is not visible at this locality. The Graham Ferry outcrop lies in the northwestern part of Jackson County, west of Pascagoula River and south of Red Creek. Remnants of the formation may be exposed in stream valleys east of the river, but they have not been recognized. Typical gray clay and silty sand beds are exposed along the road cuts and creeks north of Vancleave. The 400-foot sand developed in Pascagoula and Bayou Casotte is equivalent to the sandy beds at Graham Ferry.

The base of the 400-foot sand at Pascagoula was considered by Brown to be the base of the Graham Ferry Formation and in contact with the top of the Pascagoula Formation of Miocene age. However, about 500 feet of clay and sand below the 400-foot sand may belong to the Pliocene instead of the Miocene Series. According to Akers and Drooger (1957, p. 667) "* * * the suggested Miocene-Pliocene boundary in the Gulf Coast is in accordance with usage of oil companies which follow Ellisor (1940) in recognizing the *Rangia microjohnsoni* zone as uppermost Miocene." However, until additional information is available, Brown's interpretation of the boundary in the vicinity of Pascagoula is accepted in this study.

The apparent dip of beds of the Graham Ferry is southward at the rate of 19 feet per mile, as determined from seven measured sections extending for 3 miles north and south of Graham Ferry on the west bank of Pascagoula River. The contact between a 3-foot bed of gray clay overlying a bed of light gray fossiliferous sand is the horizon on which the calculation of dip is based. Even though this fossiliferous bed was not traced in the subsurface, projection of the dip southeast to Pascagoula indicates a correlation of the sand exposed in the bluff (see measured section, p. 13) with the 400-foot sand at Pascagoula. Similarly, the sand and overlying clay in the measured section on the river, when projected west to the geologic section (pl. 2), correlates with the sand and overlying clay occurring in the wells along the cross section. Even though the strata are faulted in the vicinity of Graham Ferry, the displacement is small and of minor consequence in the correlation.

The relation of the Graham Ferry to the underlying Pascagoula Formation is obscure, and a definite contact between the formations in the outcrop area has not been observed. The base of the sand can be traced in well logs from Gautier to Vancleave. Correlation of the sand beds west of the river with those east of the river is based on tracing the water levels from the drawdown cone in Pascagoula to Gautier, on correlation of electrical logs, and on chemical characteristics of the water. The correlation is shown in a geologic section (pl. 2) extending from the vicinity of Vancleave to Gautier and thence along sections (pls. 10, 12) to Pascagoula and Bayou Casotte.

Brown correlated the 400-foot sand at Pascagoula with sand occurring at a depth of 500 to 600 feet at Ocean Springs. An alternative explanation based on correlation of electrical logs, sample studies, and water levels in numerous wells indicates that the sand in the Graham Ferry Formation fills a broad trough at Pascagoula and rises somewhat to the west (pls. 10, 13).

The chief reason for changing Brown's correlation of the 400-foot sand at Pascagoula with the 500-foot sand at Ocean Springs is the difference in water levels in the two aquifers in the vicinity of Gautier (pls. 4, 5). Pumpage from the Graham Ferry Formation in Pascagoula has created a drawdown cone that is reflected as far as Gautier. The water level in the Graham Ferry stands 10 to 20 feet below the water level in the 500-foot sand in Gautier. Comparison of the two piezometric maps shows that the difference in water levels in the two aquifers decreases toward Vancleave as the effect of the pumpage at Pascagoula decreases.

The 400-foot sand usually is gray and similar in many respects to sand in the Pascagoula Formation, but it contrasts markedly with the overlying sand of the Citronelle Formation and terrace deposits. The gray color is caused by an abundance of magnetite and other dark heavy accessory minerals, which occur in large concentrations in some wells and in smaller quantities in others. The sand in the bluffs along Pascagoula River similarly contains an abundance of dark mineral grains that give the outcrop a characteristic gray color. The pronounced variation in mineral content of the sand that occurs within very short distances is suggestive of beach deposits. The variation in amount of sand, percentage of heavy mineral constituents, and

interbedding with marine clay and carbonaceous beds clearly indicate estuarine and near-shore environments of deposition for the sediments. The sand is well sorted and fine- to medium-grained. The lower 10 to 20 feet is coarse-grained in the vicinity of Gautier and contains granules of polished chert and well-rounded quartz. The difference in transmissibility that occurs in Bayou Casotte and in the city of Pascagoula is evidence of the textural variation.

A dense gray carbonaceous clay bed 20 to 40 feet thick separates the 400-foot sand from the overlying coarse sand and gravel of the Citronelle Formation. The sand thickens gradually at the expense of the overlying clay from Vancleave to Pascagoula where the sand is as much as 110 feet thick. The thickness of the sand increases from Ocean Springs to Pascagoula and then decreases somewhat to the east. In the Bayou Casotte area the sand ranges from 40 to 80 feet thick and in places is divided into two beds separated by a shaly unit from 20 to 40 feet thick. Where the aquifer is shaly, it can be traced by the presence of thin sandy layers that correlate with the thicker sands. The sand can be traced as far north as Escatawpa on the east side of the river where it wedges out beneath the coarse alluvial and terrace deposits in the Pascagoula River valley and the broad terrace. The sand is virtually absent in places along U.S. Highway 90 (pl. 10) where equivalent beds of sandy clay 50 to 75 feet thick are present.

HYDROLOGY

Because 60 percent (6.6 mgd) of all ground water used in the Pascagoula-Moss Point area is pumped from the Graham Ferry Formation, water levels in this aquifer have declined considerably. Since 1939, most of the city supply has been pumped from this formation. Municipal pumpage from the Graham Ferry amounted to 1.9 mgd in 1958. Pumpage data for earlier years are not available. In the Bayou Casotte industrial area, the average daily pumpage according to records and estimates is 2.2 mgd. The remaining 2.5 mgd is used in other industries and in private water systems supplying residential subdivisions.

The earliest recorded water-level measurements were made in 1939 when three city wells were drilled along Communy Street and water levels stood from 4 to 8 feet below land surface. The first industrial wells were drilled in 1936, and two others were added in the area prior to drilling of the city wells. Since that time, many domestic wells, 3 additional municipal wells, and about 20 industrial wells have been constructed in various parts of the area.

During the period 1939–60, the water level has declined in downtown Pascagoula at the rate of 1.7 feet per year. The hydrographs (fig. 25) compare water-level declines in several parts of the area. Wells P68,

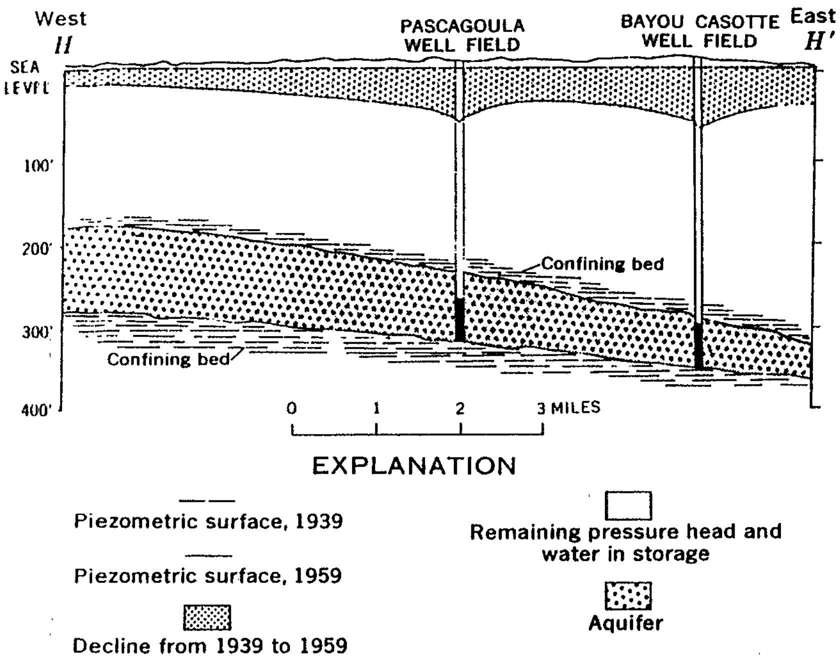


FIGURE 26.—Section *H-H'* across City of Pascagoula and Bayou Casotte industrial area showing profile of piezometric surface in 1959–60. See plate 4 for location of section.

P69, and P113 are city wells in operation. The rate of decline in P68 and P69 is about 2 feet per year, whereas the decline in P113 is 1.5 feet per year in 1961. The water level in well P123, one of three wells in the Graham Ferry at the Communy Street well field, declined at the rate of 1.7 feet per year.

In May 1957, the static water level of the Graham Ferry Formation at Bayou Casotte stood 11 feet below land surface, approximately the same as the water level of the overlying Citronelle Formation in 1961. Since 1957–58, when seven industrial wells were constructed in the Graham Ferry, the static water level has fallen 39 feet, while the water level of the Citronelle Formation has remained the same (fig. 26). Prior to 1957, domestic wells in the area completed in the Graham Ferry were equipped with suction pumps that are capable of operating efficiently when the static water level is less than 21 feet below the surface. An increase in industrial pumpage has necessitated the installation of jet pumps capable of lifting water from greater depths.

Early in 1961, water levels in the Bayou Casotte area had begun to stabilize under the draft (fig. 25, Q106). The annual decline in water levels will diminish in the future until an additional draft is imposed on the formation through construction of new wells or pumpage is increased from operating wells. The rate of decline will increase in proportion to the increased draft.

The results of three pumping tests in the Bayou Casotte area and one in the western part of the city show considerable range in the transmissibility of the Graham Ferry Formation (table 30). The transmissibility determined in the test in Pascagoula is 54,000 gpd per ft. The average for the tests in Bayou Casotte is about 23,000 gpd per ft. The coefficients of storage determined from three of the tests were of the same magnitude and averaged about 0.0003. Due to the lower transmissibility, greater drawdowns can be expected in Bayou Casotte than in the city. Figure 27 is a graph comparing the amount of interference that can be expected between two wells in the Graham Ferry Formation having the coefficients determined in the two areas. Electrical and drillers' logs show considerable variation in total thickness of sand in the formation; for this reason, the transmissibility will vary from place to place. The short period of pumping in Bayou Casotte has resulted in a decline in water levels that equals the decline recorded in the city over a much longer period of time. This decline is due to the concentration and amount of pumping and the lower transmissibility.

Records and estimates indicate that about 1,500 gpm (2.2 mgd) was pumped on the average day in 1959 and 1960 from the Graham Ferry Formation at Bayou Casotte. By using coefficients of transmissibility and storage determined from the test at the Quaker Oats Co. plant (table 20), the effect on the city wells was calculated with the Theis equation for a period of 1 year of steady operation and a distance of 4 miles between the center of pumping at Bayou Casotte and city well P113. The interference amounted to 10 feet. However, there has not been that large a decline in water levels in any of the city wells in 1959 and 1960.

A shaly zone which would form a partial barrier to free movement of ground water may exist in the aquifer near the ground-water divide between the municipal and the Bayou Casotte well fields. The inference may be drawn that recharge has developed either (1) from within the area, through contribution of water from overlying and underlying beds caused by reduction in pressure in the aquifer, or (2) from movement of water into the area at a more rapid rate owing to a hydraulic connection with the Citronelle Formation in the vicinity of the Escatawpa River (pl. 10; fig. 28). The recharge probably is due to a combination of these causes.

The Graham Ferry Formation is recharged in the uplands west of Pascagoula River where it is exposed in the hills north of Vancleave. Here the formation is overlain in places by the Citronelle Formation, which discharges water to the streams and permits some water to

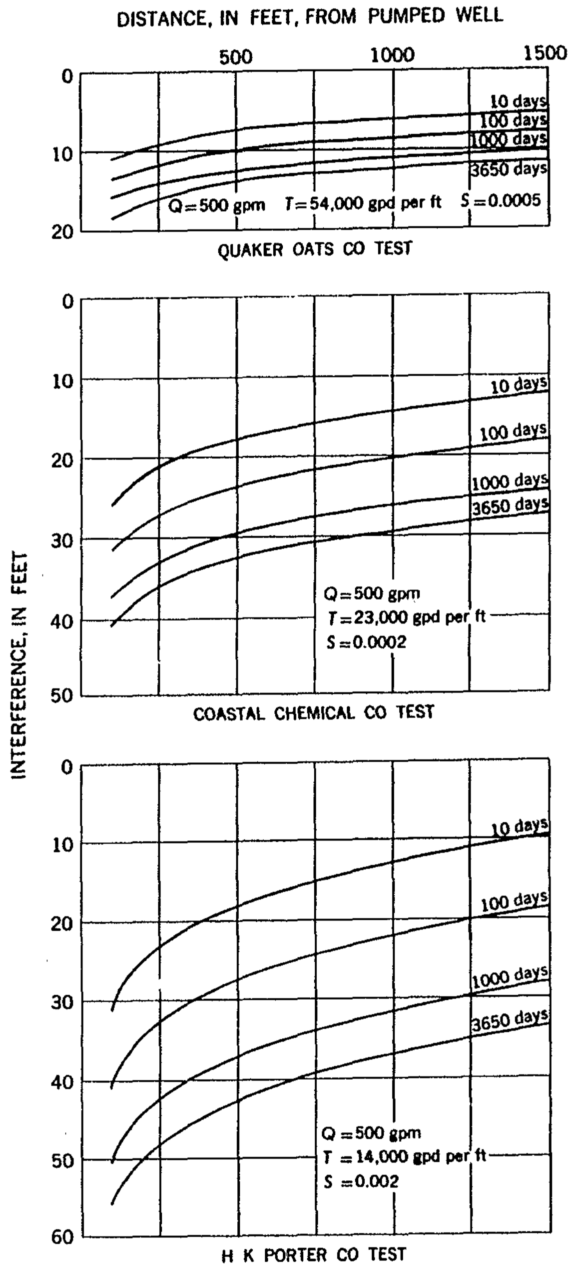


FIGURE 27.—Yield-drawdown relationship of the Graham Ferry Formation.

infiltrate the Graham Ferry beneath it. Recharge also occurs indirectly through the alluvium, terrace deposits, and Citronelle Formation on the broad terrace north of Escatawpa River. Because the recharge area is not far distant, a perennial supply of water is available to replace much of the water used near the coast. The piezometric map (pl. 4) indicates the direction of movement of ground water under confined conditions into the drawdown cone. Lower mineralization of the water to the west and northwest indicates a source of recharge in that direction.

Because of the proximity of the recharge area, an amount of water equal to that pumped in 1959–60 from this formation in the Pascagoula area can be developed without seriously impairing the quality of the water. Deeper pump settings will be required as pumpage increases.

The piezometric map (pl. 4) shows the form of the water surface and the elevation at which water stood in wells in the winter of 1959–1960. Pumping has created drawdown cones; the depth of the cone depends on the rate and duration of pumping, transmissibility of the aquifer, and location of centers of pumping. Three cones exist in the area: Kreole, Pascagoula, and Bayou Casotte. From the area of the cones to Escatawpa, the piezometric surface rises until it coincides approximately with the piezometric surface in the overlying Citronelle. Ground water moves into the area of heavy pumpage from the north and northwest. West of Pascagoula River the influence of pumping in Pascagoula is reflected in the water levels, which are somewhat lower than in the overlying and underlying aquifers.

Summarizing, the rate of decline apparently is not much different early in 1961 from what it has been for the long period, although the amount of water pumped in 1961 is greater. This stability means that if use had not increased, the rate of decline during the past 3 years would have been less. It follows also that as demand continues to increase, water levels in the area will decline at about the same rate unless the demand is sharply accelerated.

Although localities exist where little sand is present in the Graham Ferry, as in the northern part of Bayou Casotte industrial area, the sand can be traced to the east. The sand is thick in the western part of Pascagoula and Gautier. These are areas for additional development of water supplies from the aquifer. Although pumping tests have not been made west of the river, the transmissibility probably is about the same as that determined in Pascagoula. Additional pumpage in the Gautier area will decrease the quantity of water moving into Pascagoula and will lower water levels in the city.

Figure 26 shows the relationship between depth of the aquifer and available pressure head remaining for additional development. Profile of the piezometric surface was taken from the piezometric map (pl. 4), but the thickness and uniformity of the aquifer are generalized between the drawdown cones. If the use of water from the aquifer is doubled or tripled, certain wells should be monitored to detect the presence and source of any possible increase in chloride content. The natural recharge can be supplemented by reinjection of water.

CHEMICAL QUALITY

Water from the Graham Ferry Formation is of a sodium bicarbonate type and has a relatively high percentage of chloride in some places. The water is soft (hardness ranged from 7 to 52 ppm in samples analyzed) and slightly colored. The iron content usually is less than 0.5 ppm; however, water from three wells in the Moss Point area had an iron content ranging from 1.2 to 2.6 ppm. The dissolved-solids content of the water generally increases in a southeasterly direction. Observed maximum and minimum concentrations of the predominant constituents and the dissolved solids in water samples analyzed are summarized in the following table.

Chemical analyses, in parts per million, of water from the Graham Ferry Formation

Constituent	Concentration	
	Maximum	Minimum
Sodium (Na)	272	55
Alkalinity (HCO_3+CO_3)	576	144
Chloride (Cl)	205	12
Dissolved solids	766	226

Results of analyses of water from the Graham Ferry Formation are shown in table 22. The chemical character of the water is similar to that of water from the Pascagoula Formation; this similarity indicates that the individual chemical characteristics of the water probably are a result of the same type of environmental conditions. For the most part the higher concentration of chloride in the Pascagoula area is a result of incomplete flushing of the sea water that was trapped in the sediments at the time of their deposition. The high sodium bicarbonate content of water is a result of the same series of reactions, involving calcium carbonate, base-exchange minerals, and carbonaceous material, that produce the high sodium bicarbonate water in the Pascagoula Formation.

Analyses of water from wells west of Pascagoula River show that a marked decrease in chloride content occurs in the direction of Ocean Springs and Vancleave (pl. 12). This decrease may be due to the nearby source of recharge in the uplands north of Vancleave. The piezometric map (pl. 4) shows that ground water is moving southeastward from the Vancleave area toward Pascagoula and that the chloride content increases in the same direction.

Four wells (P68, Q100, Q101, and Q111) were sampled periodically to monitor the chloride content of water in the Graham Ferry Formation. The variation in chloride (see table 22) did not indicate any salt-water intrusion in the aquifer. The analyses are indicative of the magnitude of variation of chloride content in water from this formation.

CITRONELLE FORMATION AND TERRACE DEPOSITS

STRATIGRAPHY

The Citronelle Formation and terrace deposits are considered together as a hydrologic unit, although the Citronelle is an older deposit and underlies the terrace deposits along the coast. The Citronelle Formation is extensive; it blankets the uplands in the northern part of Jackson County and a large part of George County. The areal extent of the Citronelle and terrace deposits is shown on the geologic map (pl. 1). West of Pascagoula River the Citronelle has been more deeply eroded and is less extensive than in the area east of the river. From the outcrop the formation dips beneath the surface south of Big Point where it is overlain by a progressively thickening section of alluvial and marine terrace deposits at the coast line. The base of the formation drops 350 feet from Lucedale to Bayou Casotte at an average dip of 8 feet per mile south (pl. 6). The contact with underlying formations is unconformable, irregular, and marked in many places by a distinct change in color and material. The locations and altitudes of a few contacts are shown in plate 6.

The contact between the Citronelle Formation and the underlying Pascagoula or Graham Ferry Formation is marked usually by coarse sand and gravel underlain by purple weathered clay. Layers of crossbedded sand alternating with beds of clay balls occur in many places in the lower part of the Citronelle. Petrified wood is common in many exposures. Gravel is irregularly distributed, but generally more conspicuous in the lower part of the formation and in the terrace deposits bordering the river. In the subsurface near the coast, the base of the Citronelle was traced in sample cuttings by the first appearance of gray carbonaceous or pale green clay of the underlying Graham Ferry. Electrical logs of water wells usually show a distinct change in character of the resistivity curve at the contact.

The formation increases in thickness from zero, where it is completely eroded away on the upland slopes, to more than 100 feet near the coast. Near Lucedale, the formation is as much as 80 feet thick. As much as 100 feet of coarse sand occurs in one unbroken unit at Bayou Casotte. Elsewhere the unit may consist of lenses of coarse sand separated by carbonaceous or fossiliferous clay and sandy clay.

East of Pascagoula River a practically continuous blanket of sand, comprising the Citronelle Formation and terrace deposits, covers the surface from the northern edge of George County to Pascagoula. The blanket thins southward to Harleston, where there is only about 20 feet of sand, and thickens again farther south. On the terrace west of Hurley, sand and gravel deposits similar in content, texture, and lithology to the Citronelle reach 100 feet in thickness. These are mapped as terrace deposits at the surface, but the lower part of the sand and gravel unit south of Big Point may be Citronelle inasmuch as it continues uninterrupted into the coarse sand at the coast. The Citronelle apparently continues beneath the alluvial fill of the Pascagoula River and thins west of Gautier.

The Citronelle is thicker and more uniform in texture near the coast in the vicinity of the Pascagoula River valley, and it thins both east and west of the valley (pl. 10). In Bayou Casotte the sand is massive but thins to some extent northward toward Kreole. Logs of wells north of Escatawpa River show an abundance of coarse sand equal in thickness to the Citronelle farther south. On the broad terrace partly occupied by Black Creek Swamp, sand and gravel is uniformly distributed; it increases in thickness from 60 feet below the escarpment west of Hurley to about 80 feet near the Pascagoula River west of Wade.

HYDROLOGY

The source of the water in the Citronelle Formation and the associated terrace deposits is precipitation on the area. As noted earlier, the belt of highest rainfall, which extends across George County, coincides with the greatest upland accumulation of deposits of the Citronelle. Although only a very small percent of the total precipitation percolates to the water table, the volume is considered large because of the extensive area involved and the permeable nature of the material. In the higher parts of the area, as much as 40 feet of saturated sand and gravel exists above the top of the Miocene formations under water-table conditions. Water moves laterally in all directions from the underground reservoir to the tributary streams of Pascagoula and Escatawpa Rivers. Because of the relatively slow movement through the Citronelle and terrace deposits, a large volume of water is discharged fairly evenly by the numerous contact springs to the streams throughout the year.

From Lucedale to the coast the water table conforms to the land surface (pl. 6). In the uplands, where the land surface is from 250

to 300 feet above sea level, the water table stands as much as 60 feet below the surface. Water-table conditions generally exist at least as far south as Wade and Hurley. In the broad flat area south of Wade, the water table stands within a few feet of the surface. The presence of clay beds in the lowlands causes semiartesian conditions. At the coast line, where artesian conditions exist and the aquifer is buried beneath 50 to 100 feet of clay, silt, and fine sand, the piezometric surface stands from 3 to 15 feet below land surface, or very nearly at sea level. Plate 14 shows variations in the saturated thickness of the Citronelle Formation and terrace deposits east of the Pascagoula River.

Many domestic wells derive water from the Citronelle and terrace deposits. A few industrial wells and one municipal well are completed in the Citronelle Formation at depths of 150 feet along the north side of Escatawpa River and in Moss Point. Hydrographs of two wells in the Citronelle Formation are presented in figure 28. In the Escatawpa area some logs show the presence of sand and gravel to a depth of 230 feet, considerably below the depth to which the Citro-

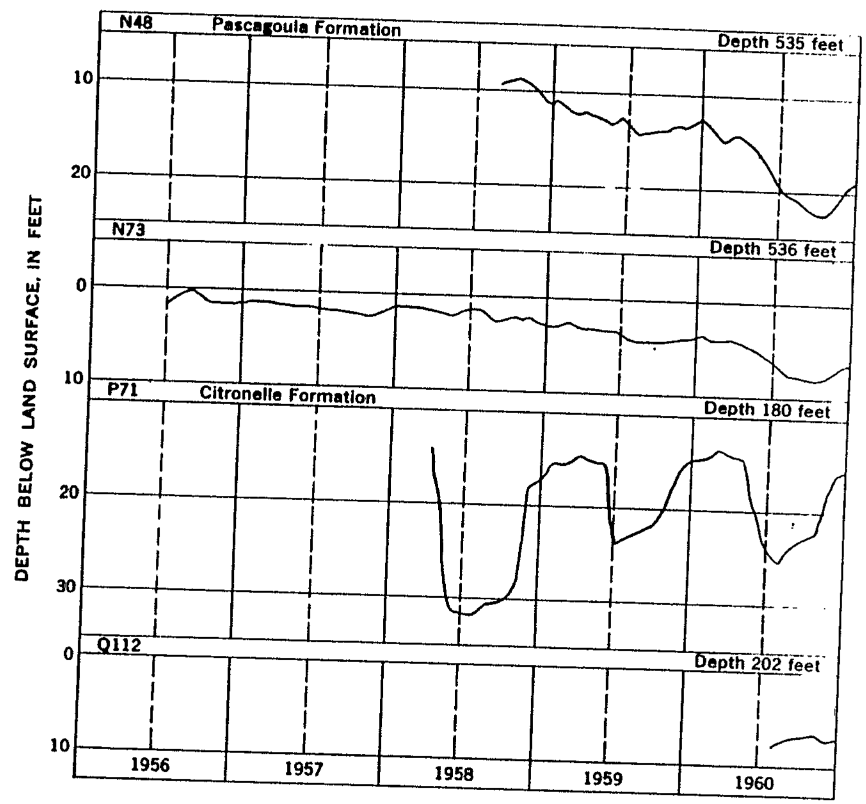


FIGURE 28.—Hydrographs of wells in the Pascagoula and Citronelle Formations.

nelle should extend. The clay bed normally present between the Graham Ferry and Citronelle apparently is absent in places, and the water from the deeper aquifer at 230 feet is similar in chemical quality to that from 150 feet. The iron content, particularly is unusually high for a well completed in the Graham Ferry. Altitudes of water levels in these wells were used on the water-level contour map of the Citronelle Formation and terrace deposits, and they indicate a drawdown cone in the center of the Escatawpa River industrial area. These water levels fit the piezometric map of the Graham Ferry Formation equally well.

In the uplands, ground water is discharged from the Citronelle at its contact with the underlying clay beds of the Pascagoula and Graham Ferry Formations. The discharge area of the Citronelle Formation farther south is in the alluvial valley of Pascagoula River and south of the coast line beyond Horn Island. Movement of water through the formation in the vicinity of Escatawpa and Pascagoula is relatively slow because the water surface is nearly level. The quantity of water passing through the aquifer toward the gulf and the river is directly proportional to the hydraulic gradient. It is estimated that 3 to 5 mgd of water is discharging across the 10-foot contour to the Pascagoula River and the gulf. Increasing the hydraulic gradient by increasing the draft on the aquifer will speed the southerly flow of water. Only a small part of the water that normally discharges into the gulf is intercepted by wells.

A pumping test was made on the aquifer at Bayou Casotte to determine the coefficients of transmissibility and storage and the differences in chloride content of the water. Plate 15, in addition to being a geologic section, shows the differences in chloride content of the water and variations in thickness of the aquifer. The test was laid out along a north-south line 5,900 feet long (fig. 29) and was run continuously for 21 days. The transmissibility of the aquifer was determined for each of the wells by using the Theis nonequilibrium method and the Thiem equilibrium method. The values were nearly uniform for all the wells except for a lower value of transmissibility at the north well (O–1), which is indicative of an increasing clay content in the formation in that direction. This increase had been noted earlier in wells drilled in the vicinity of U.S. Highway 90. The application of the test results to future ground-water development in the Bayou Casotte industrial area is discussed under "Potential Development" pages. The yield-drawdown relationship determined from the pumping test is shown in figure 30.

CHEMICAL QUALITY

The chemical character of water from the Citronelle Formation and from the terrace deposits is similar. In the upland areas the

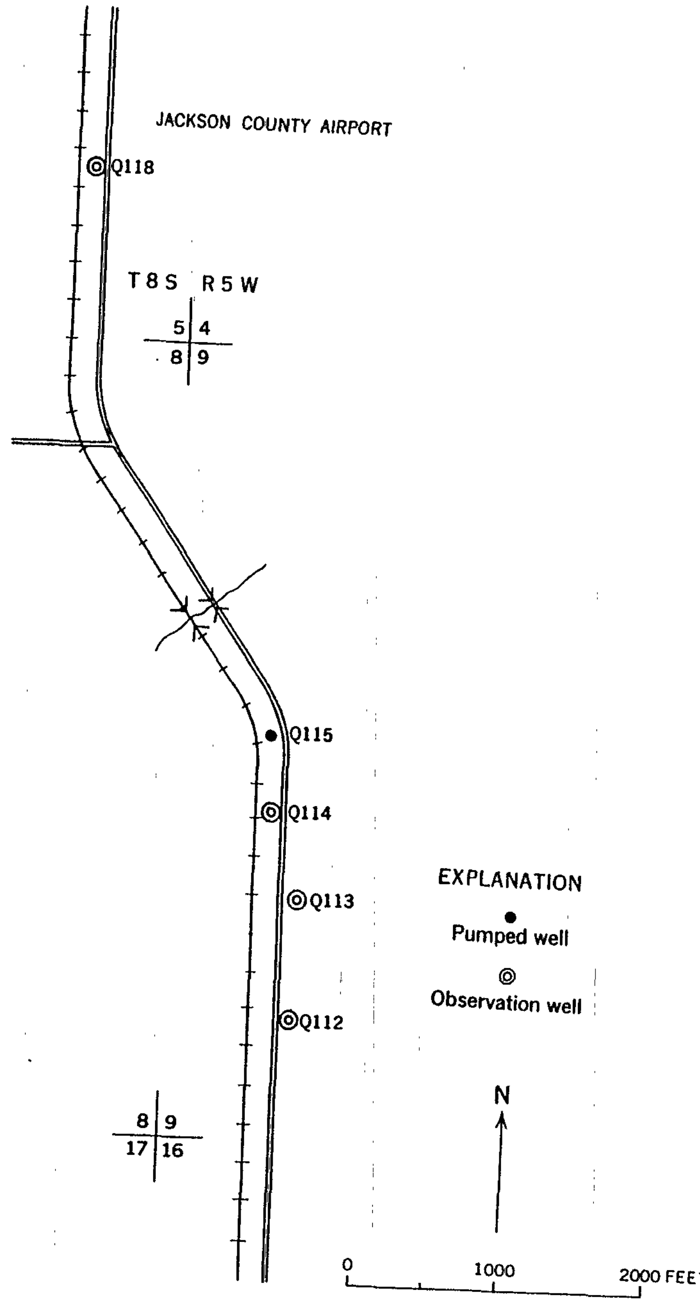


FIGURE 29.—Layout of pumping test in Bayou Casotte area.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CHARACTERIZATION OF AQUIFERS DESIGNATED AS POTENTIAL DRINKING WATER SOURCES IN MISSISSIPPI

by L. A. Gandl

Water-Resources Investigations
Open-File Report 81-550

Prepared in cooperation with the

Mississippi Department of Natural Resources,
Bureau of Pollution Control

Jackson, Mississippi
1982

Reference 20

Agricultural chemicals used in the heavily farmed area may be a source of contamination of the aquifer in some places.

Gravel is mined from the Mississippi River valley alluvial aquifer and from other alluvium in the state. Mining of gravel and possible future mining of lignite locally may cause changes in recharge to the aquifer and quality of water in the aquifer.

Citronelle Aquifers

The Citronelle aquifers are made up of many discontinuous, hydrologically independent aquifers. They are present in the state from around 32° latitude southward (fig. 8). The beds are exposed at the surface over most of their area of occurrence and are present primarily on hilltops. Along stream valleys they have been eroded to expose the underlying Miocene beds. The aquifers dip southward at about 6 ft/mi and the dip becomes steeper near the coast where they are overlain by coastal terraces. The aquifer is thickest and less dissected near the coast but rarely exceeds 100 feet thick. The Citronelle is made up of quartz sand, chert gravel, and lenses and layers of clay. It is a major source of gravel in the state.

The Citronelle Formation commonly is only partially saturated. It is a water table aquifer with water levels which vary from place to place due to the discontinuous nature of the aquifer. The low water levels vary seasonally, but are little affected regionally by pumpage because very little water is withdrawn. Locally however, water levels are lowered rapidly by pumpage. Recharge is from rainfall directly on the outcrop, and water moves quickly both vertically and downdip, recharging the underlying Miocene aquifers and sustaining local streams.

Six aquifer tests indicate transmissivities ranging from 4,000 to 13,000 ft^2/d, hydraulic conductivities of 82 to 200 ft/d, and specific capacities of 6.2 to 46 (gal/min)/ft of drawdown (Boswell, 1979a). The limited saturated thickness and limited storage capacity of the Citronelle limits its use. Large wells can be developed in the Citronelle, but a larger and more reliable source is available from the underlying Miocene aquifers.

Dissolved-solids concentrations of water in the Citronelle are less than 500 mg/L except at places along the coast where seawater is in contact with the aquifer. At most localities the water is high in iron content. In addition to local contamination by seawater along the Gulf Coast, the Citronelle may be contaminated by landfills in old gravel pits, by sewage, and by industrial and oil field wastes in surface pits. Most of the wastes in the area are dispersed through area streams, but some move into the underlying Miocene aquifer system.

Miocene Aquifer System

The Miocene aquifer system crops out in most of the southern one-third of the state (fig. 9) except where it is covered by younger coastal deposits and the Citronelle Formation. The aquifer system is composed of numerous interbedded layers of sand and clay that include

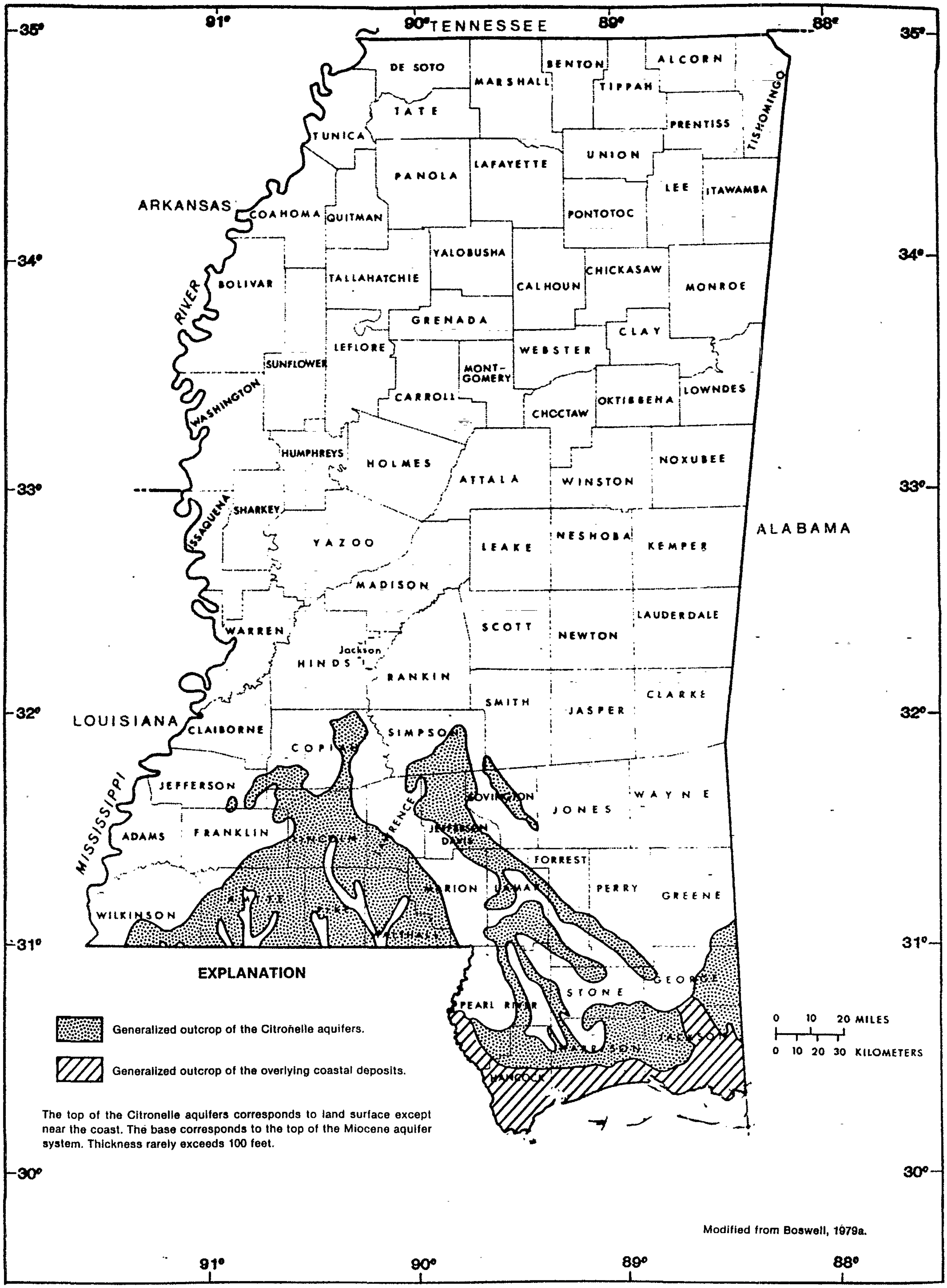


Figure 8. — Outcrop of the Citronelle aquifers and overlying coastal deposits.

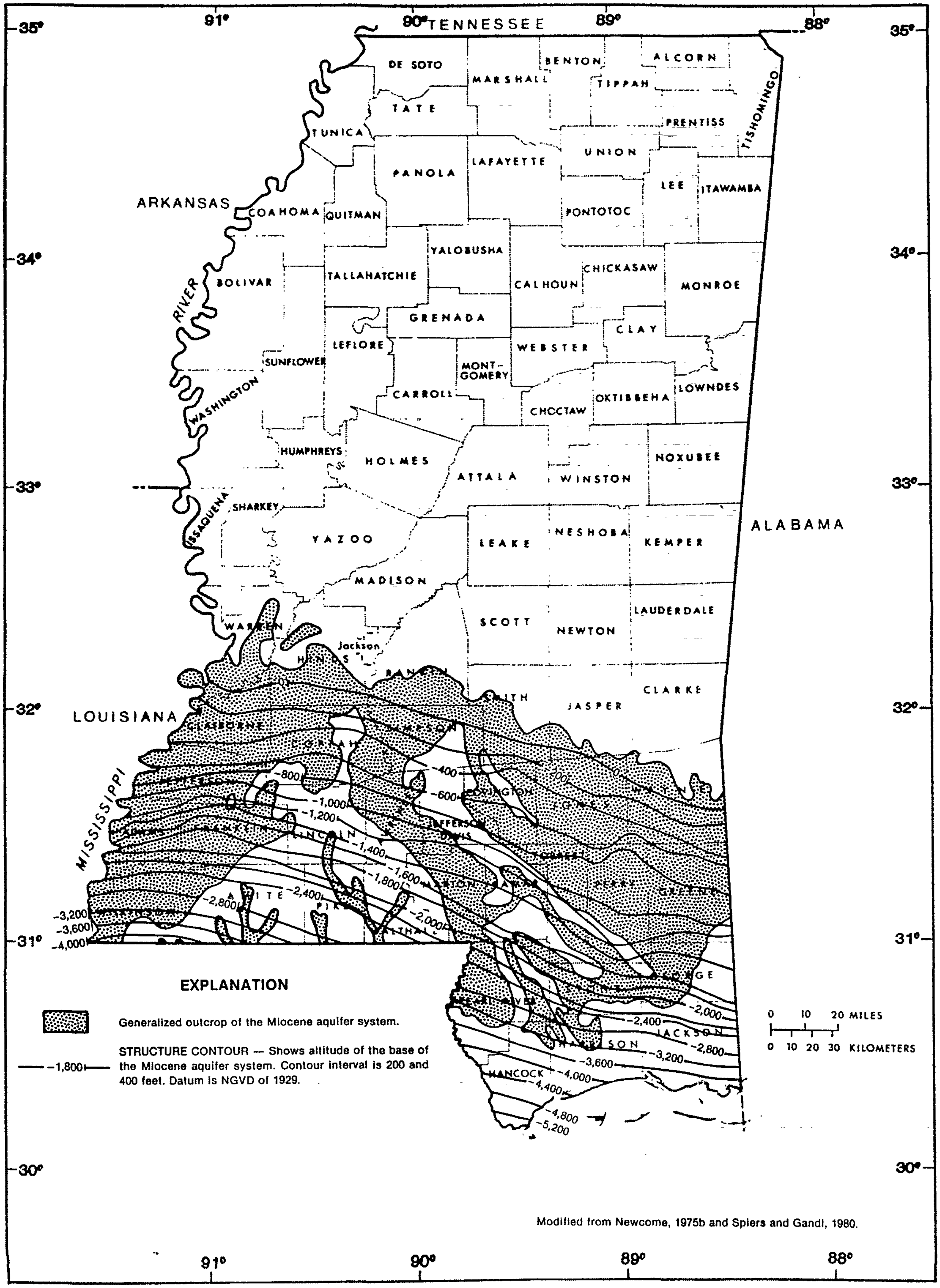


Figure 9. — Configuration of the base of the Miocene aquifer system.

the Pascagoula and Hattiesburg Formations, and the Catahoula Sandstone. Because of their interbedded nature, the formations cannot be reliably separated and correlated either on the surface or in the subsurface. The formations dip southwestward at 30 to 100 ft/mi and the dip steepens towards the coast. The aquifer system thickens as the dip steepens (fig. 10), and the thickness exceeds 3,000 feet near the coast. Within that 3,000 feet, the sand beds alone are over 1,000 feet thick, although the deepest beds do not contain freshwater (fig. 11).

The shallowest sands of the Miocene aquifer system are water-table aquifers, but the deeper sands are confined and are fully saturated. Water levels in the Miocene aquifers vary, but usually range from a few feet above land surface to 100 feet below land surface. Water levels have been regionally declining by 1 to 2 ft/yr, although the decline is greater near some centers of pumpage.

Recharge to the Miocene aquifers is from rainfall directly on the outcrop, seepage from the overlying Citronelle Formation, and leakage between aquifer units of the Miocene aquifer system.

Water movement is downdip, towards center of pumpage, and between aquifers of the system. The underlying Oligocene formations and in particular the clay of the Bucatunna Formation prevents movement between the Miocene and Oligocene aquifer systems.

The Miocene aquifers are a very prolific source of ground water. Aquifer test results have indicated transmissivity values averaging 13,000 ft^2/d. Hydraulic conductivities determined from the tests average 95 ft/d, and specific capacities are as high as 30 (gal/min)/ft of drawdown (Newcome, 1975b).

Wells in the Miocene usually tap only the upper aquifers because abundant water is available at shallow depths. Much freshwater in the deeper aquifers is available but undeveloped. The aquifers are utilized for small domestic wells and large municipal and industrial wells.

Water in the Miocene aquifers commonly is a soft sodium-bicarbonate type. Excessive iron is found in samples from some locations, but this is at places due to corrosion of pipes. Downdip near the coast, water in the deeper sand beds is saline (fig. 11). However, freshwater may be available on the offshore islands at estimated depths as great as 2,200 feet below sea level in some places.

The shallow Miocene aquifers have been contaminated in places by improperly sealed surface disposal sites and by leakage from disposal sites in the overlying Citronelle Formation (Boswell, 1979a). The deepest Miocene aquifer, the Catahoula Sandstone, is used for brine disposal in Adams, Wilkinson, and Hancock Counties (Bicker, 1972).

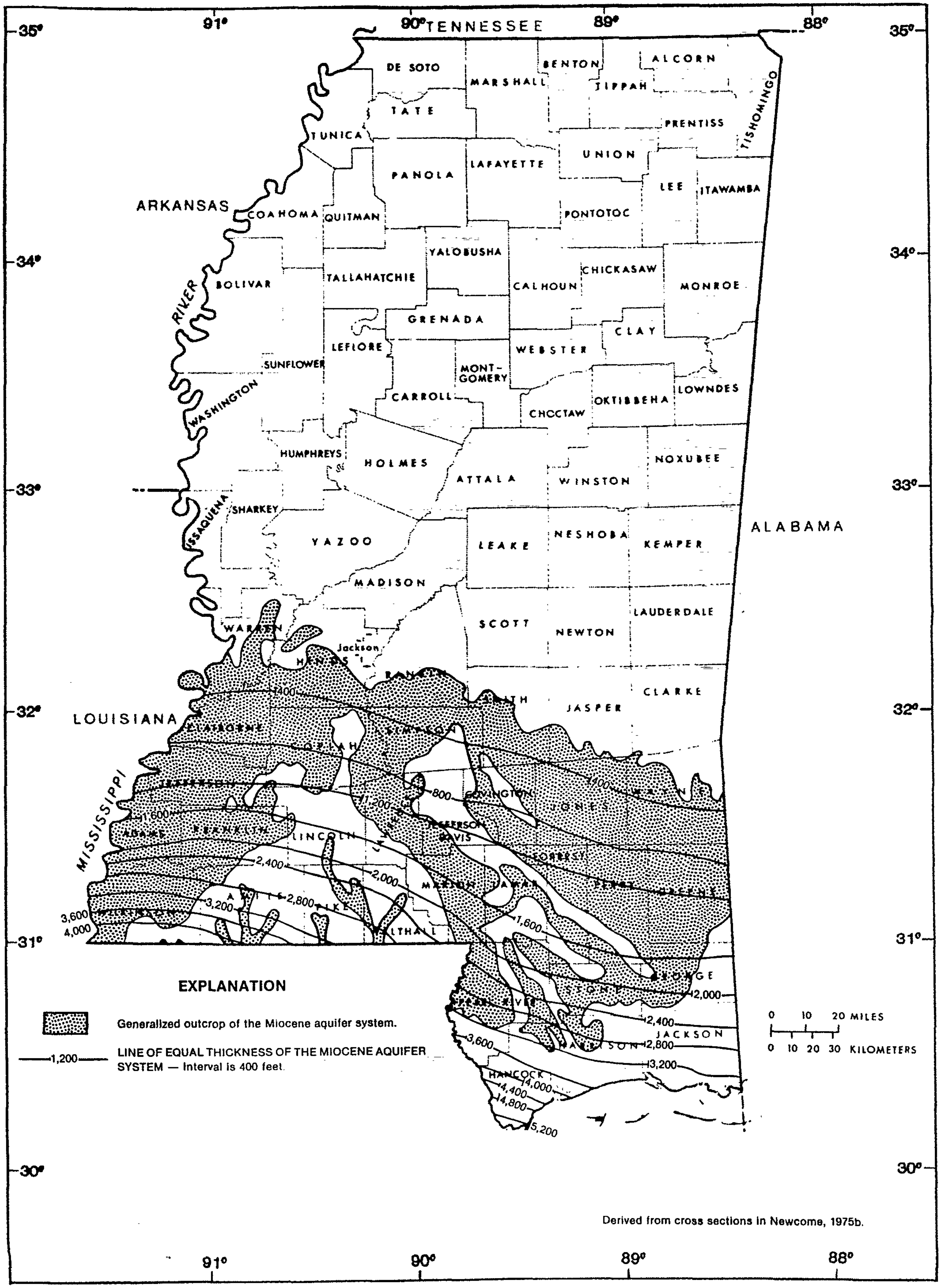


Figure 10. — Thickness of the Miocene aquifer system.

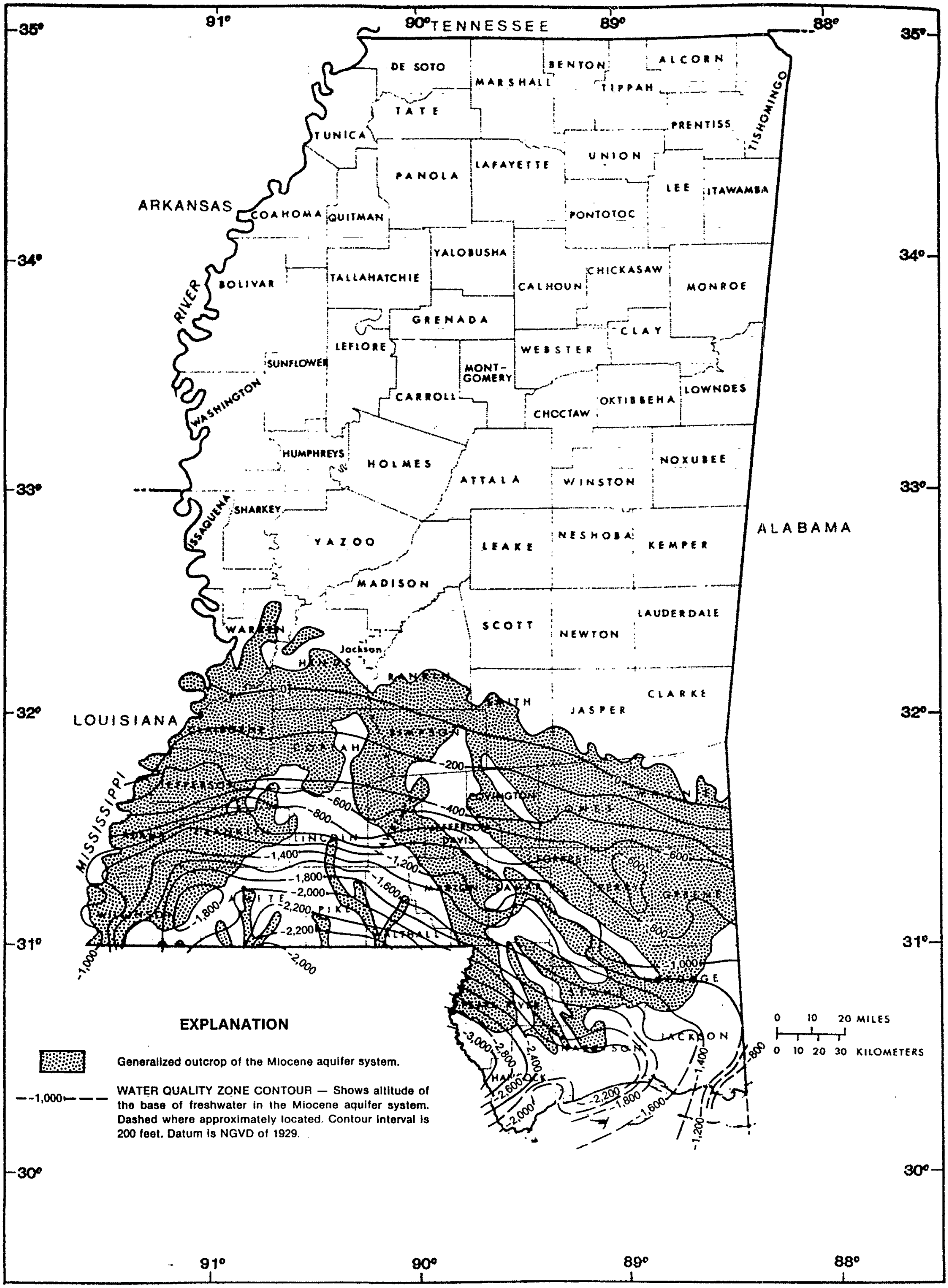


Figure 11. — Configuration of the base of freshwater in the Miocene aquifer system.

STATE OF MISSISSIPPI
DEPARTMENT OF ENVIRONMENTAL QUALITY
JAMES I. PALMER, JR.
EXECUTIVE DIRECTOR

SOUTH
SUPERFUND
MAR 8 10 39 AM '96
RE ... AL
BRANCH

March 4, 1996

Mr. Brian Farrier
Site Investigation and
Support Branch
Waste Management Division
U.S. EPA - Region IV
345 Courtland Street, N.E.
Atlanta, GA 30365

Re: Preliminary Assessment (PA) Report
Moss Point Marine, Inc.
MSD 037971801
Escatawpa, Jackson County, Mississippi

Dear Brian:

Enclosed is the Preliminary Assessment Report for Moss Point Marine, Inc. If you have any questions, please contact John Andrews, phone (601)961-5301 .

Sincerely,

Phillip Weathersby

Phillip Weathersby
Cercla Section

JA:pl

Enclosure

February 22, 1996

HAZARDOUS RANKING SYSTEM PRELIMINARY SCORE
for
MOSS POINT MARINE, INC.
MSD037971801
ESCATAWPA, JACKSON COUNTY, MISSISSIPPI

Waste Characteristics

A hazardous waste quantity of 100 was assigned and used for the groundwater, surface water, and the soil pathways. The air pathway was not scored. This value was based on the most conservative estimate using the entire 114 acres of the site.

Groundwater

The groundwater pathway was evaluated on a potential to release to the near surface groundwater. No analytical data is present to document contamination of the Miocene aquifer system.

Surface Water

The surface water pathway was scored on potential to release. The nearest perennial water body is the Pascagoula River which borders the property on the west.

Soil

The soil pathway was evaluated on likelihood of exposure. No analytical data is present to document contamination on the premises.

Air

The air pathway was not evaluated.

Facility score = 5.7792

Sgw = 11.47
Ssw = 0.739
Sse = 1.22
Sa = Not scored

Department of Environmental Quality

ENGINEERING CHART

SHEET NO. 1 OF 1

FILE

APPN

DATE 22 Feb 96

BY John Andrews

SUBJECT Moss Point Marine, Inc.
MSD 037971801 Escatawpa, Jackson County, MS

CALCULATION OF H.R.S. SCORE

Pathway	Release	Score	Score^2
Groundwater Pathway Score	Potential	11.47	131.5609
Surface Water Pathway Score	Potential	0.739	0.5461
Soil Exposure Pathway Score	Likelihood of exposure.	1.22	1.4884
Air Migration Pathway Score	Not scored.	—	—
		Total	133.5954

$$\text{Facility Score} = \sqrt{\frac{133.5954}{4}}$$

$$\text{Facility Score} = \underline{\underline{5.7792}}$$

Department of Environmental Quality

ENGINEERING CHART

FILE

APPN

DATE

BY John Andrews

SUBJECT Moss Point Marine
Escatawpa, Jackson County MS

GROUNDWATER MIGRATION PATHWAY SCORESHEET

Aquifer - Miocene including the Graham Ferry.

Likelihood of Release to an Aquifer

1. Observed Release
   No observed release to the groundwater 0

2. Potential to Release

2a. Containment
Table 3-2
No evidence of hazardous substance migration, container area surrounded by dike 9

2b. Net Precipitation
Annual precipitation - 64
Annual lake evaporation - 47
Net precipitation - 17
Table 3-4
Greater than 15 to 30. 6

2c. Depth to Aquifer
Aquifer depth - 5' thickness of the sandy loam top soil.
Contamination depth - 0
Table 3-5 5'
Since the Alluvium/Terrace deposits and the Citronelle are 5 (Less than or equal to 25')
considered a hydraulic unit and the clay bed between the Graham Ferry & Citronelle is absent in places

2d. Travel Time In the Escatawpa area, the Graham Ferry is considered hydraulically connected to the alluvium.
Table 3-6
sandy loam 10^{-4}
Table 3-7
Greater than 3 to 5 35
(see 2c above)

Department of Environmental Quality

ENGINEERING CHART

SHEET NO. 2 OF 15

FILE

APPN

DATE

BY

SUBJECT Moss Point Marine

2e. Potential to Release
[lines 2a (2b + 2c + 2d)]
9(6 + 5 + 35) 414

3. Likelihood of Release
(higher of lines 1 and 2e) 414

Waste Characteristics

4. Toxicity/Mobility

substance	G.W. Mobility H.S.R.	Toxicity H.S.R.	Tox/Mob Tab. 3-9
carbon tetrachloride	1×10^{-2}	1000	10
pyridine	1×10^{0}	1000	1000
toluene	1×10^{-2}	10	0.1
xylene	1×10^{-2}	10	0.1

Highest Value 1000

5. Hazardous Waste Quantity
Table 2-5; Tier D; contaminated soil.
Because there is no documentation of sampling investigations, for purposes of this report, the total area of the facility was used to determine waste quantity.
114 acres × 43,560 ft²/acre = 4,965,840 ft² ÷ 34,000 = = 146.05

Table 2-6
100

6. Waste Characteristics
Tox/Mob × Haz. Wa. Quan.
$(1 \times 10^3) \times (1 \times 10^2) = 1 \times 10^5$
Table 2-7 18

Department of Environmental Quality

ENGINEERING CHART

SHEET NO. 3 OF 15

FILE

APPN

DATE

BY

SUBJECT Moss Point Marine

7. Nearest Well

LO25 is located just to the Northeast less than ¼ mi from the facility. It is screened in the Pascagoula (Miocene) at 350 feet.

Table 3-11 — 20

8. Population

8a. Level I Concentrations — 0

8b Level II Concentrations — 0

8c. Potential Contamination

Distance mile(s)	# Home Wells		# Public Wells	# Public Well Conn.	Total Popul.	Value Tab. 3-12
0 - ¼	[6	+	0	]	2.82 = 16.92	17
¼ - ½	[6	+	0	]	2.82 = 16.92	11
½ - 1	[18	+	1A	]	2.82 = 1,608.81	523
1 - 2	[49	+	0	]	2.82 = 138.18	30
2 - 3	[88			]	2.82 = 248.16	21
3 - 4	[131	+	3A + 1B	]	2.82 = 7,877.19	417
					Total 9,906.18	1,019

A. Escatawpa $\frac{2210}{4} = \frac{552.5}{well}$

B. Moss Point $\frac{6029}{6} = \frac{1,004.8}{well}$

1990 Census - 2.82 persons/household for Jackson County

PC = 1/10 (1,019) = 101.9 — 102

8d. Population
(lines 8a + 8b + 8c) — 102

9. Resources — 5

10. Wellhead Protection Area

Mississippi has no wellhead protection program — 0

Department of Environmental Quality

ENGINEERING CHART

FILE
APPN
DATE
BY

SUBJECT Moss Point Marine

11. Targets
(lines 7 + 8d + 9 + 10)
20 + 102 + 5 + 0 — 127

Groundwater Migration Score for an Aquifer

12. Aquifer Score
[(lines 3 x 6 x 11) ÷ 82,500]
(414 x 18 x 127) ÷ 82,500 — 11.47

Groundwater Migration Pathway Score

13. Pathway Score
(value from line 12) — 11.47

Department of Environmental Quality

ENGINEERING CHART

SHEET NO. 5 OF 15

FILE

APPN

DATE

BY

SUBJECT Moss Point Marine

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

DRINKING WATER THREAT

Likelihood of Release

1. Observed Release
   No observed release to the surface water — 0

2. Potential to Release by Overland Flow

2a. Containment
Table 4-2
No evidence of hazardous substance migration from source area and: Neither 1) maintained engineered cover, or 2) functioning and maintained run-on control system and run-off management system. — 10

2b. Runoff
~~Drainage source areas and areas upgradient~~
Table 4-3
the area of the site is 1.14 acres — 2
Table 4-4
Fairhope very fine sandy loam — B
Table 4-5
6.5 inches 2yr-24 hour rainfall — 4
Table 4-6 — 2

2c. Distance to Surface Water

Table 4-7 Less than 100 feet
Pascagoula River is on the western edge of the facility. — 25

2d. Potential to Release by Overland Flow
[line 2a (2b + 2c)]
10 (2 + 25) — 270

Department of Environmental Quality

ENGINEERING CHART

FILE

APPN

DATE

BY

SUBJECT Moss Point Marine

3. Potential to Release by Flood

3a. Containment (Flood)
Table 4-8 — 10

3b. Flood Frequency
Table 4-9 100-yr flood plain — 25
Elevation of site is approximately 6 feet above sea level.

3c. Potential to Release by Flood
(lines 3a X 3b)
10 x 25 — 250

4. Potential to Release
(lines 2d + 3c)
270 + 250 = 520 ⇒ Max Value 500 — 500

5. Likelihood of Release
(higher of lines 1 and 4) — 500

Waste Characteristics

6. Toxicity/Persistence

substance	Toxicity H.S.R.	Persist. H.S.R.	Fac. Value Tab. 4-12
carbon tetrachloride	1000	0.4	400
pyridine	1000	1.0	1000
toluene	10	0.4	4
xylene	10	0.4	4

Highest Value 1000

Department of Environmental Quality

ENGINEERING CHART

FILE
APPN
DATE
BY

SUBJECT Moss Point Marine

7. Hazardous Waste Quantity
Table 2-5; Tier ;

see Part 5 on sheet No. 2 (Groundwater Pathway)

Table 2-6
see Part 5 on sheet No. 2 (Groundwater Pathway) 100

8. Waste Characteristics
Tox/Pers. x Haz. Wt. Quan.
$(1 \times 10^3) \times (1 \times 10^2) = 1 \times 10^5$
Table 2-7 18

Targets

9. Nearest Intake
0

10. Population

10a. Level I Concentrations 0

10b. Level II Concentrations 0

10c. Potential Contamination 0

10d. Population
(lines 10a + 10b + 10c)
0

11. Resources
5

Department of Environmental Quality

ENGINEERING CHART

FILE

APPN

DATE

BY

SUBJECT Moss Point Marine

12. Targets
(lines 9 + 10 + 11)
0 + 0 + 5 — 5

Drinking Water Threat Score

13. Drinking Water Threat Score
[(lines 5 x 8 x 12) ÷ 82,500]
(500 x 18 x 5) ÷ 82,500 — 0.545

HUMAN FOOD CHAIN THREAT

Likelihood of Release

14. Likelihood of Release
(Same value as line 5) — 500

Waste Characteristics

15. Toxicity/Persistence/Bioaccumulation

substance	Toxicity H.S.R.	Persis. H.S.R.	Bioacc. H.S.R.	Tox/Pers. Tab 4-12	Tox/Per/Bio. Tab 4-16
carbon tetrachloride	1000	0.4	50	400	2×10^4
pyridine	1000	1.0	0.5	1000	500
toluene	10	0.4	50	4	200
xylene	10	0.4	50	4	200

Highest Value — 2×10^4

16. Hazardous Waste Quantity
(Same value as line 7) — 100

Department of Environmental Quality

ENGINEERING CHART

FILE

APPN

DATE

BY

SUBJECT Moss Point Marine

17. Waste Characteristics

Tox/Pers. x Haz. Ws. Quan. x Bioacc.

$(4 \times 10^2) \times (1 \times 10^2) \times (5 \times 10^1) = 20 \times 10^5$ or 2×10^6

Table 2-7 — 32

Targets

18. Food Chain Individual

para. 4.1.3.3.1 pg 51620

$0.0001 \times 20 = 0.002 \simeq 1$ — 1

19. Population

19a. Level I Concentrations — 0

19b. Level II Concentrations — 0

19c. Potential Human Food Chain Contamination

Fishery –

$\frac{(w) \quad x(L) \quad (5{,}280'/mi)}{43{,}560 \text{ ft}^2/\text{acre}} = \quad \text{acres}$

acres x lbs./acre = lbs. fish

Table 4-18 (see back for calculations)

Table 4-13

PF = 1/10( ) — 0.000713

19d. Population

(lines 19a + 19b + 19c)

0 + 0 + 0.000713 — 0.000713

20. Targets

(lines 18 + 19d) — 1.000713

19 c. L × w ÷ 43,560 ft² = acres × lbs/acre = lbs fish

Large River

A. $(4.2\,mi \times \frac{5280\,ft}{mi}) \times 300' \div 43{,}560\,ft^2 = 152.73$ acres × 50 lbs/acre = 7,636.5 lbs fish

B. $(4.4 - 4.2\,mi \times \frac{5280\,ft}{mi}) \times 400' \div 43{,}560\,ft^2 = 9.7$ acres × 50 lbs/acre = 485 lbs fish

C. $(5.0 - 4.4\,mi \times \frac{5280\,ft}{mi}) \times 500' \div 43{,}560\,ft^2 = 36.4$ acres × 50 lbs/acre = 1,820 lbs fish

D. $(5.65 - 5.0\,mi \times \frac{5280\,ft}{mi}) \times 600' \div 43{,}560\,ft^2 = 47.3$ acres × 50 lbs/acre = 2,365 lbs fish

E. $(7.45 - 5.65\,mi \times \frac{5280\,ft}{mi}) \times 1000' \div 43{,}560\,ft^2 = 218.2$ acres × 50 lbs/acre = 10,910 lbs fish

F. $(12.0 - 7.45\,mi \times \frac{5280\,ft}{mi}) \times 600' \div 43{,}560\,ft^2 = 330.91$ acres × 50 lbs/acre = 16,545.5 lbs fish

	Production	Pop. Value (Table 4-18)	×	Dilution (Table 4-13)	=	
A.	7,636.5	3	×	0.0001	=	0.0003
B	485	0.3	×	0.0001	=	0.00003
C	1,820	3	×	0.0001	=	0.0003
D	2,365	3	×	0.0001	=	0.0003
E	10,910	31	×	0.0001	=	0.0031
F	16,545.5	31	×	0.0001	=	0.0031
						0.00713

$PF = \frac{1}{10}(.00713) = .000713$

Department of Environmental Quality

ENGINEERING CHART

FILE

APPN

DATE

BY

SUBJECT Moss Point Marine

Human Food Chain Threat Score

21. Human Food Chain Threat Score
[(lines 14 X 17 X 20) ÷ 82,500]
(500 x 32 x 1.000713) ÷ 82,500 = 0.194077 — 0.1941

ENVIRONMENTAL THREAT

Likelihood of Release

22. Likelihood of Release
(same value as line 5) — 500

Waste Characteristics

23. Ecosystem Toxicity/Persistence/Bioaccumulation

Substance	Eco. Tox H.S.R.	Persist H.S.R.	Eco. Bio. H.S.R.	E.T./Per. Tab 4-20	E.T.P.B. Tab 4-21
carbon tetrachloride	100	0.4	50	40	2000
pyridine	100	1.0	0.5	100	50
toluene	100	0.4	50	40	2000
xylene	100	0.4	50	40	2000

Highest Value 2×10^3

24. Hazardous Waste Quantity
(same value as line 7) — 100

25. Waste Characteristics
Eco.Tox/Per X Haz. Wa. Quan. X Ecobio. Pot.
$(4 \times 10^1) \times (1 \times 10^2) \times (5 \times 10^1) = 20 \times 10^4$ or 2×10^5
Table 2-7 — 18

Department of Environmental Quality

ENGINEERING CHART

SHEET NO. 11 OF 15

FILE

APPN

DATE

BY

SUBJECT Moss Point Marine

Targets

26. Sensitive Environments

26a. Level I Concentrations — 0

26b. Level II Concentrations — 0

26c. Potential Contamination

Table 4-23 = 75 — Habitat known to be used by Federal designated endangered or threatened species.

Table 4-24 = 250 — 10 miles of wetlands

Table 4-13 = 0.0001 — Large River

SP = 1/10 [(75+250)0.0001] = 0.00325 — 0.00325

26d. Sensitive Environments (lines 26a + 26b + 26c)

0 + 0 + 0.00325 — 0.00325

27. Targets (Value from line 26d) — 0.00325

Environmental Threat Score

28. Environmental Threat Score [(lines 22 x 25 x 27) ÷ 82,500]

(500 x 18 x 0.00325) ÷ 82,500 = 0.0003545 — 0.00035

SURFACE WATER OVERLAND/FLOOD COMPONENT SCORE FOR A WATERSHED

29. Watershed Score (lines 13 + 21 + 28)

0.545 + 0.1941 + 0.00035 = 0.76937 ≃ 0.73945 — 0.739

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORE

30. Component Score (Value from line 29) — 0.739

Department of Environmental Quality

ENGINEERING CHART

FILE

APPN

DATE

BY

SUBJECT Moss Point Marine

SOIL EXPOSURE PATHWAY SCORESHEET

RESIDENT POPULATION THREAT

Likelihood of Exposure

1. Likelihood of Exposure 550

Painting activities are performed on the entire 114 acres of the facility.

Waste Characteristics

2. Toxicity

substance	Toxicity H.S.R.
carbon tetrachloride	1000
pyridine	1000
toluene	10
xylene	10

Highest Value 1000

3. Hazardous Waste Quantity

Table 5-2; Tier ;

See Part 5 on Sheet No. 2 Groundwater Pathway

Table 2-6

100

4. Waste Characteristics

Toxicity X Haz. Wa. Quan

$(1 \times 10^3) \times (1 \times 10^2) = 1 \times 10^5$

Table 2-7

18

Department of Environmental Quality

ENGINEERING CHART

FILE
APPN
DATE
BY

SUBJECT Moss Point Marine

Targets

5. Resident Individual — 0

6. Resident Population

6a. Level I Concentrations — 0

6b. Level II Concentrations — 0

6c. Resident Population (lines 6a + 6b)
0 + 0 — 0

7. Workers
Number of workers – greater than 100
Table 5-4 — 10

8. Resources — 0

9. Terrestrial Sensitive Environments — 0

10. Targets (lines 5+6+7+8+9)
0 + 0 + 10 + 0 — 10

Resident Population Threat Score

11. Resident Population Threat (lines 1 x 4 x 10)
550 x 18 x 10 — 99,000

Department of Environmental Quality

ENGINEERING CHART

FILE
APPN
DATE
BY

SUBJECT Moss Point Marine

NEARBY POPULATION THREAT

Likelihood of Exposure

12. Attractiveness/Accessibility
Table 5-6
Surrounded by maintained fence or combination of maintained fence and natural barriers — 5

13. Area of Contamination
Table 5-7
If considering entire area of 114 acres then total area is greater than 500,000 ft^2. — 100
114 acres x 43,560 ft^2/acre = 4,965,840 ft^2

14. Likelihood of Exposure
Table 5-8 — 50

Waste Characteristics

15. Toxicity
(same value as line 2) — 1000

16. Hazardous Waste Quantity
(same value as line 3) — 100

17. Waste Characteristics
(same value as line 4) — 18

Targets

18. Nearby Individual within ¼ mi.
Table 5-9 — 1

Department of Environmental Quality

ENGINEERING CHART

SHEET NO. 15 OF 15

FILE

APPN

DATE

BY

SUBJECT Moss Point Marine

19. Population Within One Mile

Distance Mile	# Houses Estimated	Population Estimated	Popul. Value Tab. 5-10
0 - 1/4	34	96	1
1/4 - 1/2	102	288	2
1/2 - 1	259	730	3
		Total	6

Average persons/household, 1990 census - 2.82 Jackson County

PN = 1/10 (6) = 0.6 0.6

20. Targets
(lines 18 + 19)
1 + 0.6 1.6

Nearby Population Threat Score

21. Nearby Population Threat
(lines 14 X 17 X 20)
50 x 18 x 1.6 1440

SOIL EXPOSURE PATHWAY SCORE

22. Soil Exposure Pathway Score
[(lines 11 + 21) ÷ 82,500]
(99,000 + 1,440) ÷ 82,500 = 1.21745 1.22